

Landscapes2 INDEX REPORT CARD

2017

SEPTEMBER 2018

Landscapes2



▶ Landscapes2 Index
page 6



Chester County Board of Commissioners

Michelle Kichline
Kathi Cozzone
Terence Farrell

Chester County Planning Commission

Matthew Hammond, P.E.,
Chairman

Dr. Douglas Fasick,
Vice-chairman

Daniel DiMucci, RLA, ASLA

Judy L. DiFilippo

Michael Heaberg

Kevin C. Kerr

Molly Morrison

E. Martin Shane

Joseph J. Tarantino

Prepared by the
Chester County Planning Commission

601 Westtown Road, Suite 270
P.O. Box 2747
West Chester, PA 19380-0990

610-344-6285

www.chescoplanning.org

www.chesco.org/planning

www.Landscapes2.org

Table of Contents

- Introduction 3
- Landscapes2 Index and Measures 4
- Highlights 5
- Landscapes2 Index Report Card 2017 6
 - Preserved Land
 - Protected Farmland..... 7
 - Protected Open Space, Non-farmland 8
 - Development
 - Proposed Housing Units, in Growth Areas..... 9
 - Proposed Non-residential Development, in Growth Areas 10
 - Sewer Infrastructure 11
 - Housing
 - Housing Affordability 12
 - Residential Loans, in Urban Areas..... 13
 - Housing Density, in Growth Areas 14
 - Transportation
 - Traffic Safety..... 15
 - Public Transportation Access..... 16
 - Travel Time..... 17
 - Economy
 - Farm Production..... 18
 - Small Business Loans 19
 - Resources
 - Stream Quality 20
 - Air Quality..... 21
 - Partnership
 - Municipal Ordinance Amendments..... 22

Introduction

Purpose

The Landscapes2 Index measures progress in achieving the goals of *Landscapes2, the Chester County Comprehensive Policy Plan*. This “report card of progress” is published annually by the Chester County Planning Commission.

Background

Landscapes2, as adopted by the Board of County Commissioners, commits the county to the vision of preserving and enhancing the unique character of Chester County’s landscapes by concentrating growth in the most appropriate areas. The plan provides a framework for managing growth by encouraging sound economic development, revitalizing urban centers, and protecting open space and agricultural resources. The plan includes goals for eleven elements to guide development of policies and actions, and refinement of the Livable Landscapes Map. The plan established three initiatives for change:

- Build working partnerships
- Create sustainable communities
- Keep Chester County green

These initiatives promote the accomplishment of the principles of Landscapes2.

With the adoption of Landscapes2, the Planning Commission updated the Landscapes Index to closely reflect the new plan. The Planning Commission developed the original Landscapes Index to measure the progress toward achieving the goals of Landscapes and to keep the plan in the forefront of community discussion. The Landscapes Index measured changing conditions from 1996 to 2010. The current Landscapes2 Index continues the function of monitoring progress toward the goals of Landscapes2.

Landscapes2 Index and Measures

The Landscapes2 Index consists of sixteen measures related to the goals of Landscapes2 and the three initiatives for change. Each measure reflects the status of an element of the Landscapes2 plan. Positive trends in a measure signify improvement. Negative trends reveal deficiencies that should be addressed.

The selected measures must be relevant to the goals of Landscapes2. The data must be understandable and clearly indicate whether the trend is positive or negative for Landscapes2. All measures are based on reliable data that is updated every year and reported in a consistent manner. An increasing value must signify a positive trend for Landscapes2.

The Landscapes2 Index serves as a barometer of many diverse trends. The index provides a snapshot of current conditions compared to conditions as they existed in 2009 when Landscapes2 was adopted. The component measures show trends for specific subjects and help to show why the index improved or regressed. Over time the trend line created by the annual index shows the degree of progress being made to achieve the goals of Landscapes2.

Calculating the index

Each of the sixteen measures has base year data to serve as a starting point for establishing a trend and developing the Landscapes2 Index. Eight of the measures have 2009 data for the base year. Six measures use 2008 for the base year because that was the latest data available at the time the index was established. Two measures use 2015 because of recent changes in the source data. All but five measures use a three year average calculated with the base year and the two preceding years. This statistical technique minimizes short term dips or spikes that may not be typical of the trend. This establishes a more reliable base value for future comparison.

The data for each measure are converted to a base year value of 100 for the index. This provides a common initial value for each measure. Every year after the base year, the latest comparison data for each measure is divided by the base year data to calculate the new value for that measure. All measures are calculated so that an increasing value represents a positive trend and a decreasing value represents a negative trend. The Landscapes2 Index is calculated as the average of all component values.

Key features of the index:

- Value of each measure = (Current year/Base year) x 100
- The base year value is 100.
- In each following year:
 - Above 100 shows improvement
 - Below 100 shows decline
- Landscapes2 Index = average of all 16 measures

The Index is the average of 16 measures which relate to the three initiatives for change in Landscapes2:

- Build working partnerships
- Create sustainable communities
- Keep Chester County green

Highlights

Summary of Findings from the 2017 index

From 2016 to 2017, the Landscapes2 Index rose from 106 to 110, indicating an increase since the base years. However, there have been some noteworthy changes within the specific subjects. Ten of the measures were above 100 (indicating improvement), while five measures were below 100 (indicating declining conditions). Twelve measures showed a change ranging from between -5 and +5, and so are largely unchanged. Three measures showed a change that was over +5 or under -5, and so indicate more substantial change. The two most noteworthy changes are addressed below.

Measures showing noteworthy changes

- Proposed Housing Units in Growth Areas — This indicator declined from 130 in 2016 to 123 in 2017, a decrease of 7. This decrease primarily reflects the fact that the prior year, 2016, was an extremely high year for multi-family proposals rather than an increase in housing units in non-growth areas.
- Housing Density in Growth Areas — This indicator rose from 105 in 2016 to 148 in 2017, an increase of 43. This finding is consistent with the rise in the number of higher density development proposals, such as townhouses, which have been reviewed by the planning commission in recent years. Given that higher density units tend to be built in urban centers, suburban landscapes, and public transportation hubs like commuter rail stations, this development has prominently been centered in growth areas.

The 2017 Landscapes2 Index rose to 108, meaning there has been modest improvement in conditions since the base years.

Landscapes2 Index Report Card 2017

The *Landscapes2 Index Report Card 2017* measures progress that has been made to achieve the goals of *Landscapes2, the Chester County Comprehensive Policy Plan*.

[Click](#) on each measure for detailed information.

Category	Measure	2016	2017
Preserved land	▶ Protected Farmland	139	144
	▶ Protected Open Space, Non-farmland	108	111
Development	▶ Proposed Housing Units, in Growth Areas	130	123
	▶ Proposed Non-residential Development, in Growth Areas	127	123
	▶ Sewer Infrastructure	122	127
Housing	▶ Housing Affordability	106	106
	▶ Residential Loans, in Urban Areas	89	93
	▶ Housing Density, in Growth Areas	105	148
Transportation	▶ Traffic Safety	90	94
	▶ Public Transportation Access	77	75
	▶ Travel Time	*111	* 100
Economy	▶ Farm Production	NA	NA
	▶ Small Business Loans	50	54
Resources	▶ Stream Quality	92	98
	▶ Air Quality	*138	* 134
Partnership	▶ Municipal Ordinance Amendments	106	108

110

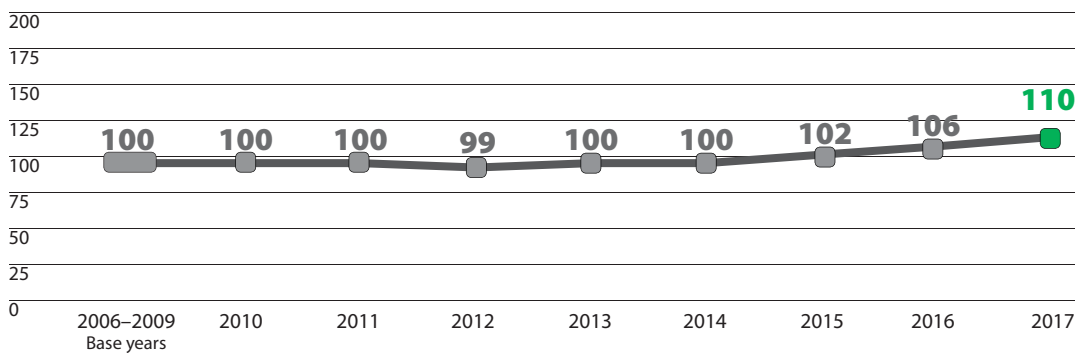
**Landscapes2
Index
2017**

The index is the average of all 15 measures.

NA: Data not available due to discontinuation of data source.

* A new base year was established in 2015.

Landscapes2 Index



Protected Farmland

144

Index Value

Purpose Statement

Preservation of farmland is important to maintain the agricultural industry, productive soils, and cultural heritage of Chester County. The amount of eased farmland is an indication of the commitment of property owners and the public sector to preserve land for agricultural production.

Description

Acres of farmland protected by the Chester County Agricultural Land Preservation Board easement purchases.

Base year	2009	26,710	Cumulative	*	Annually Protected
	2010	28,140		1,430	
	2011	29,020		880	
	2012	30,560		1,540	
	2013	32,050		1,490	
	2014	34,660		2,610	
	2015	36,140		1,480	
	2016	37,130		990	
	2017	38,460		1,330	

Data Source: Chester County Department of Open Space Preservation

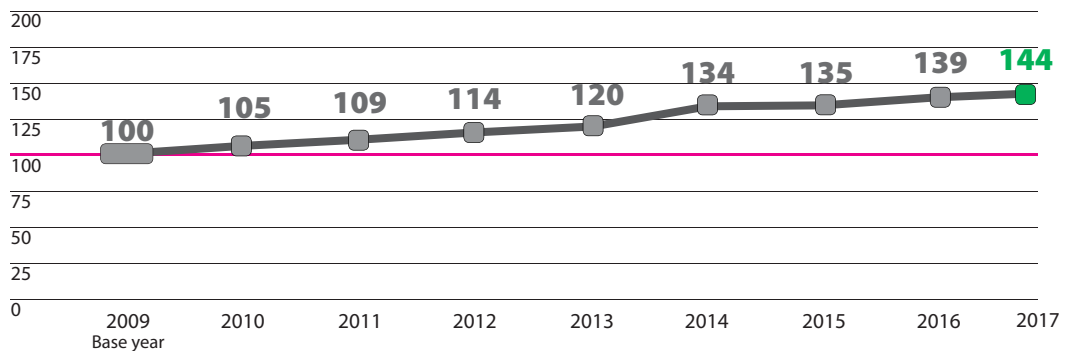
* Data not available

Index value formula:

$$\left(\frac{\text{Acres Current year}}{\text{Acres Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{38,460}{26,710} \right) \times 100 = 144$$

Index trend line



Interpretation

There were 1,330 acres placed under agricultural easement protection in 2017 through the state and Chester County farmland easement grant programs. These programs also include municipal funding. The number of acres eased in 2017 represents a steady growth in farmland protection. The number of eased acres in 2017 was 33% greater than in 2016. Farmland easement purchase programs have been successfully protecting Chester County farmland since 1990.

Protected Open Space, Non-farmland

111
Index Value

Purpose Statement

Open space protection is necessary to maintain the balance between growth and preservation. Open space protects natural resources, provides land for recreation, and enhances the quality of life. The amount of protected land is an indication of the commitment of the public sector, organizations, and land owners to preserve open space.

Description

Acres of open space protected by public ownership, land trusts, or home owners associations (excluding agricultural conservation easements).

Base year	2009	87,520	Cumulative	*	Annually Protected
	2010	88,690		1,170	
	2011	89,980		1,290	
	2012	90,520		540	
	2013	91,690		1,170	
	2014	92,590		900	
	2015	93,660		1,070	
	2016	94,440		780	
	2017	97,550		3,110	

Data Source: Chester County Planning Commission, annual open space inventory

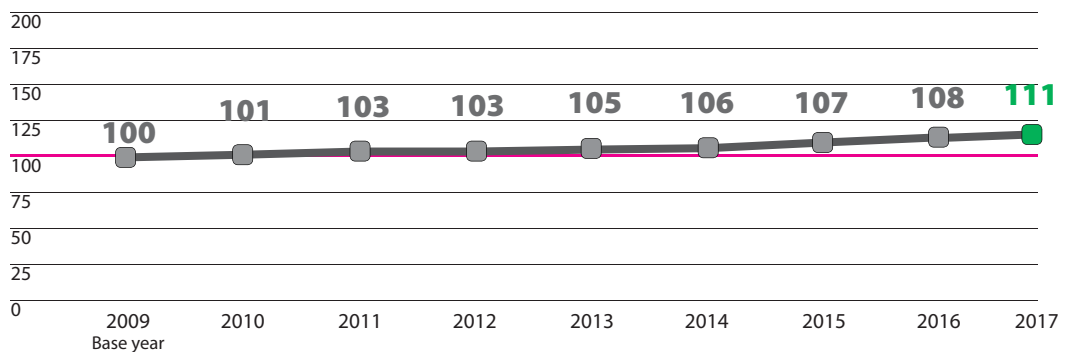
* Data not available

Index value formula:

$$\frac{\text{Acres Current year}}{\text{Acres Base year}} \times 100 = \text{Index value}$$

$$\left(\frac{97,550}{87,520} \right) \times 100 = 111$$

Index trend line



Interpretation

The amount of land protected as non-farm open space increased by 3,110 acres in 2017, a much larger number than in recent years. The total protected open space (agricultural and non-agricultural) in Chester County is 136,020 acres which covers over 28% of the County's land area.

Proposed Housing Units, in Growth Areas

123

Index Value

Purpose Statement

The Livable Landscapes map is divided into two core areas: growth areas and rural resource areas. The growth areas consist of the urban and suburban landscapes and suburban centers. The county encourages future development to be concentrated in these landscapes. Proposed housing development is an indication of whether new residential development is located in the appropriate areas.

Description

Percent of total proposed housing units in designated growth areas.

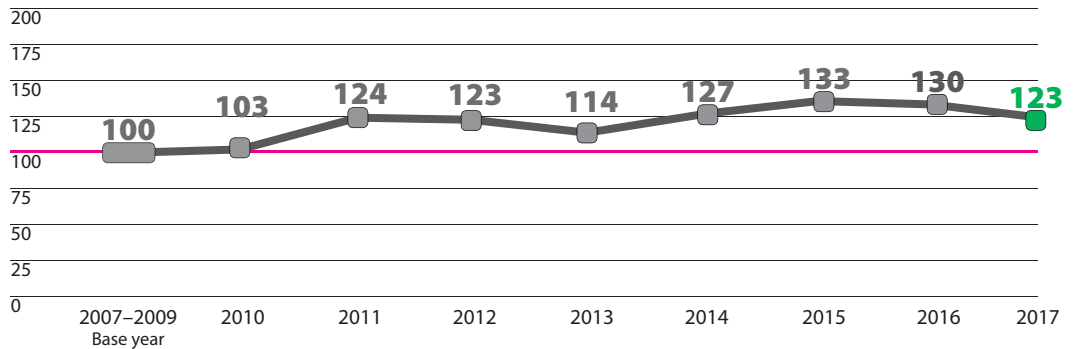
Base years	2007–2009	74%	of housing units in growth areas
	2010	76%	
	2011	91%	
	2012	91%	
	2013	84%	
	2014	94%	
	2015	98%	
	2016	97%	
	2017	91%	

Data Source: Chester County Planning Commission reviews of subdivision and land development plans

Index value formula:
$$\left(\frac{\text{Percent in growth areas Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{91\%}{74\%} \right) \times 100 = 123$$

Index trend line



Interpretation

The percentage of proposed housing units in the growth areas dropped minimally to 91% in 2017. Over the long term, this index continues to be well above the base year level of 74%. This decrease in 2017 primarily reflects the fact that 2016 was an extremely high year for multi-family units, rather than an increase in housing units in non-growth areas. The boom in townhouses and apartment developments in the last few years is likely reflected in these recent trends.

Proposed Non-residential Development, in Growth Areas

123

Index Value

Purpose Statement

The Livable Landscapes map is divided into two core areas, growth areas and rural resource areas. The growth areas consist of the urban and suburban landscapes and suburban centers. The county encourages future development to be concentrated in these landscapes. The location of proposed non-residential development is an indication of whether new development is occurring in the appropriate areas.

Description

Percent of total proposed non-residential structure square feet in designated growth areas.

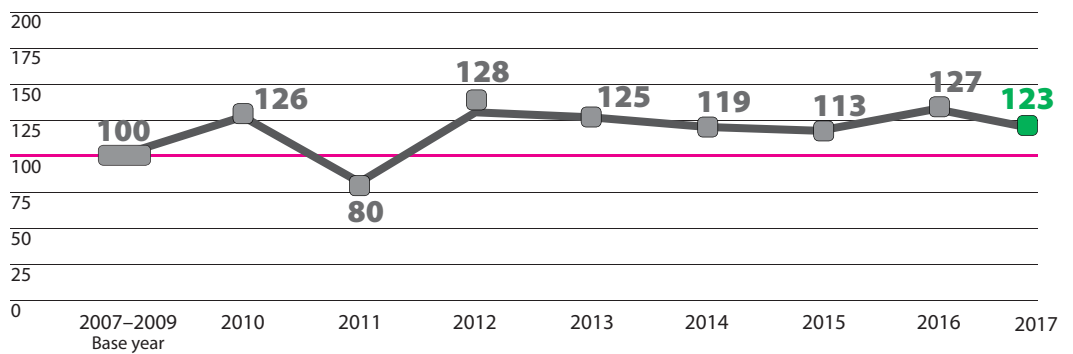
Base years	2007–2009	74%	of non-residential development in growth areas
	2010	93%	
	2011	59%	
	2012	95%	
	2013	93%	
	2014	88%	
	2015	84%	
	2016	94%	
	2017	91%	

Data Source: Chester County Planning Commission reviews of subdivision and land development plans

Index value formula:
$$\left(\frac{\text{Percent in growth areas Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{91\%}{74\%} \right) \times 100 = 123$$

Index trend line



Interpretation

The percentage of proposed structural non-residential development in growth areas in terms of square feet was 91% in 2017, a decrease from 94% in 2016. This level of development in growth areas is consistent with the goals of Landscapes2. Except for 2011, over 80% of non-residential development has been located in growth areas since the base level years.

Sewer Infrastructure

127

Index Value

Purpose Statement

Concentrating development in designated growth areas and limiting it in rural resource areas is essential to balancing growth and preservation. Public sewer systems support concentrated development in growth areas. Wastewater facilities protect groundwater, other natural resources, and public health. Planned sewer projects consistent with Landscapes2 indicate coordination between wastewater and land use planning.

Description

Percent of Act 537 sewer project reviews consistent with Landscapes2 map and policies.

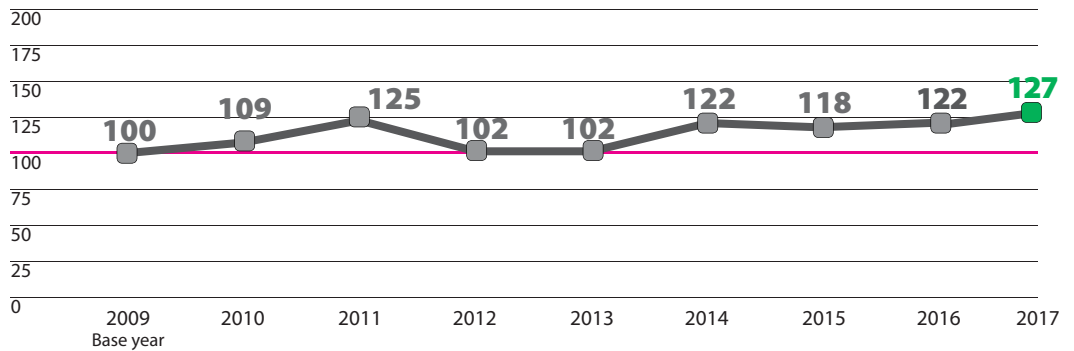
Base year	2009	77%	of sewer projects consistent with Landscapes2
	2010	84%	
	2011	96%	
	2012	79%	
	2013	79%	
	2014	95%	
	2015	91%	
	2016	94%	
	2017	98%	

Data Source: Chester County Planning Commission, Act 537 reviews

Index value formula:
$$\left(\frac{\text{Percent of sewer projects consistent with Landscapes2 Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{98\%}{77\%} \right) \times 100 = 127$$

Index trend line



Interpretation

The percentage of public sewer projects consistent with Landscapes2 rose from 94% to 98% in 2017. Of the 40 public sewer facility proposals reviewed, 39 were deemed consistent with Landscapes2. This was the highest percentages since the base year, 2009. A higher percentage of consistency indicates better coordination between sewer infrastructure and the growth pattern proposed by Landscapes2.

Housing Affordability

106

Index Value

Purpose Statement

Landscapes2 identified affordable housing as one of the most important issues facing Chester County. A good indicator of housing affordability is monthly housing costs as a percentage of household income. Housing is generally considered affordable if the household is paying less than 30% of its income for monthly housing costs. These households are not considered to have a cost burden.

Description

Percent of households paying less than 30% of monthly household income for housing costs. Households include owners with a mortgage, owners without a mortgage, and renters. The most recent data available for this index is 2016.

Base Years	2006–2008	67.0%	of households paid less than 30% of income for housing costs
	2009	66.4%	
	2010	66.8%	
	2011	64.0%	
	2012	66.0%	
	2013	66.6%	
	2014	68.5%	
	2015	70.4%	
	2016	70.7%	

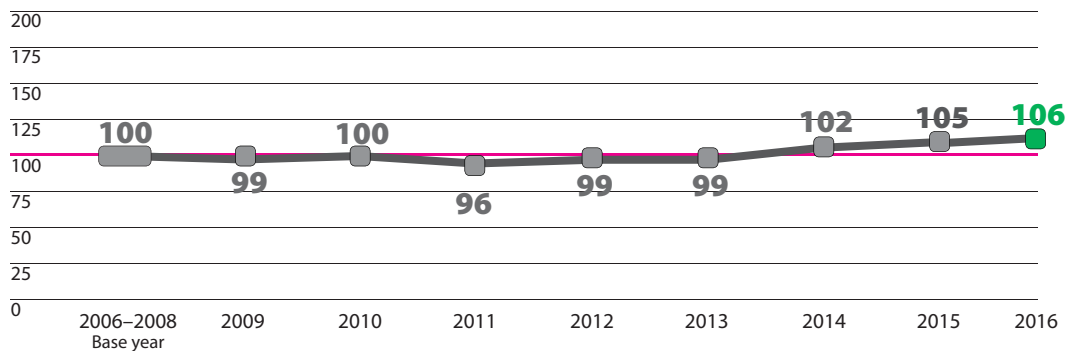
Data Source: U.S. Census Bureau, American Community Survey, Chester County 1-yr. estimates

Index value formula:

$$\left(\frac{\text{Percent of households in affordable housing Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{70.7\%}{67.0\%} \right) \times 100 = 106$$

Index trend line



Interpretation

In 2016, the percentage of households paying **less** than 30% of their income for housing costs rose above 100 for the second time since the base year level. The total number of households that paid less than 30% of income for housing costs was 129,684 which is a minimal change from 2016, indicating stabilization.

Residential Loans, in Urban Areas

93

Index Value

Purpose Statement

Maintenance and revitalization of urban areas is important to achieving the vision of Landscapes2. Investment to rehabilitate existing housing, construct new housing, and preserve historic homes is crucial to accomplish that goal. This measure indicates the proportion of residential loans that are committed to houses in urban areas.

Description

Percentage of residential loans located in urban areas relative to the percentage of housing units located in urban areas. A value over 1 means the share of loans in urban areas is greater than the share of housing units in urban areas. The most recent data available for this index is 2016.

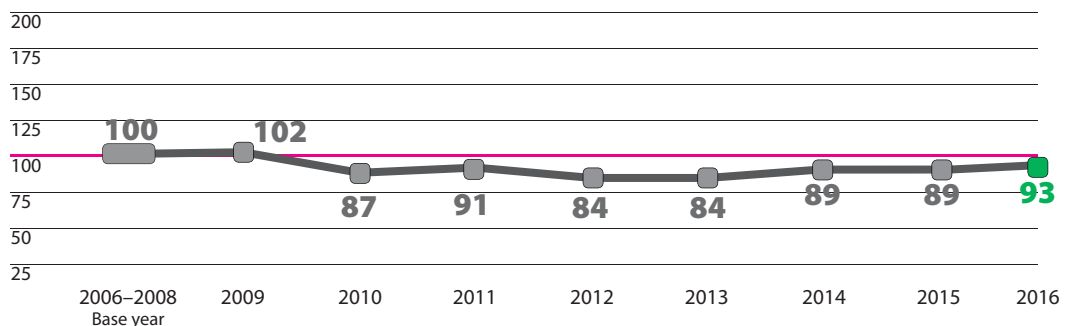
Base years	2006–2008	0.88 (ratio of percentage of urban loans to percentage of urban housing units)
	2009	0.89
	2010	0.77
	2011	0.79
	2012	0.74
	2013	0.74
	2014	0.78
	2015	0.78
	2016	0.81

Data Source: Home Mortgage Disclosure Act (HMDA) Aggregate Report, provided by Federal Financial Institutions Examination Council (FFIEC)

Index value formula:
$$\left(\frac{\text{Ratio of urban loans to urban housing units Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{0.81}{0.88} \right) \times 100 = 93$$

Index trend line



Interpretation

The total number of housing loans in the county in 2016 showed minimal change from 2015. The proportion of loans in urban areas has largely stabilized over the last four years. The urban areas are receiving a similar share of the total investment in housing as in previous years.

Housing Density, in Growth Areas

148

Index Value

Purpose Statement

Landscapes2 encourages compact development in designated growth areas to reduce sprawl. Increased density of new housing units in the growth areas is an indication of development on smaller lots in the appropriate areas.

Description

Average density (units/acre) of new single-family housing units (attached and detached) located in growth areas.

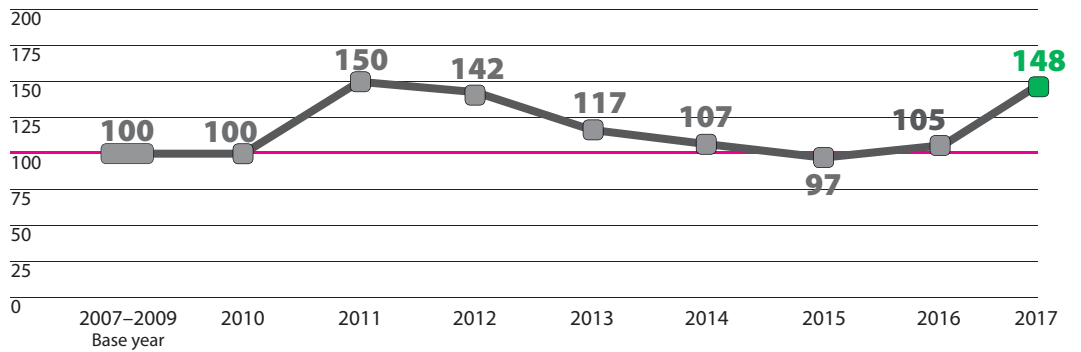
Base Years	2007–2009	1.64	housing units per acre
	2010	1.64	
	2011	2.47	
	2012	2.33	
	2013	1.92	
	2014	1.75	
	2015	1.59	
	2016	1.73	
	2017	2.43	

Data Source: New housing unit data from the Chester County Department of Assessment

Index value formula:
$$\left(\frac{\text{Housing units per acre Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{2.43}{1.64} \right) \times 100 = 148$$

Index trend line



Interpretation

The average density for new single-family housing units in the growth areas increased substantially in 2017. This finding is consistent with the rise in the number of higher density development proposals such as townhouses that have been reviewed by the Planning Commission in recent years. Multi-family development (apartments) is not accounted for in this indicator. Thus, this indicator does not reflect overall housing density.

Traffic Safety

94

Index Value

Purpose Statement

The safety of the transportation system for all users is a concern of Landscapes2. The number of crashes with property damage, injuries or fatalities is an indication of the safety of the transportation system.

Description

Total number of reportable crashes relative to vehicle miles traveled (VMT). This measure is expressed as VMT per crash. It is calculated by dividing the total VMT by the total number of crashes. An increase in the measure means there are fewer crashes relative to total miles of travel, a positive trend. The most recent data available for this index is 2016.

Base Years	2006–2008	2,605	vehicle miles traveled per crash
	2009	2,666	
	2010	2,805	
	2011	2,575	
	2012	2,690	
	2013	2,558	
	2014	2,457	
	2015	2,346	
	2016	2,436	

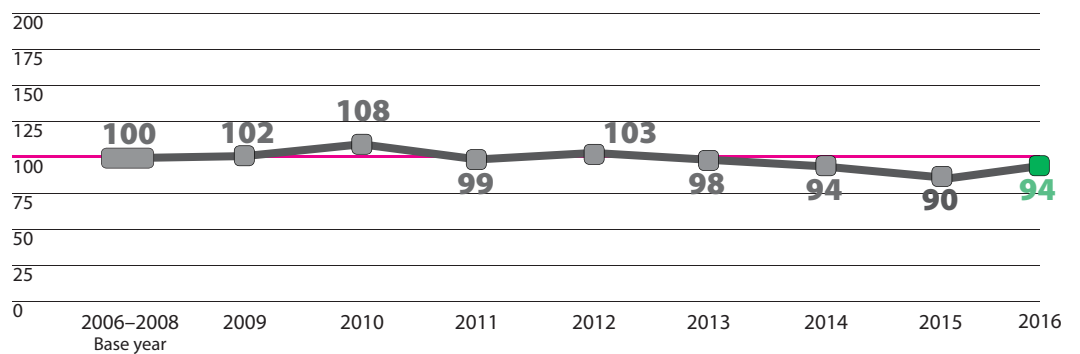
Data Source: Pennsylvania Department of Transportation, Pennsylvania Crash Facts and Statistics, and Pennsylvania Department of Transportation, Pennsylvania Highway Statistics

Index value formula:

$$\left(\frac{\text{Vehicle miles traveled per crash Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{2,436}{2,605} \right) \times 100 = 94$$

Index trend line



Interpretation

The total number of crashes decreased by 1% in 2016, including 24 fatal crashes, which was nine fewer than in 2015. The total number of daily vehicle miles traveled was similar to past years. In 2015, one crash occurred for every 2,346 miles of travel by motor vehicles. In 2016, one crash occurred for every 2,436 miles of travel by motor vehicles, which means crashes occurred less frequently.

Public Transportation Access

75

Index Value

Purpose Statement

Expanding transportation opportunities, including alternatives to automobile travel, is a priority of Landscapes2. Public transportation can expand mobility, support appropriate land use diversity, and alleviate congestion. Access to public transportation service is an indication of existing alternative transportation options.

Description

Total weekday daily vehicle route miles of all transit routes in the county in December of each year.

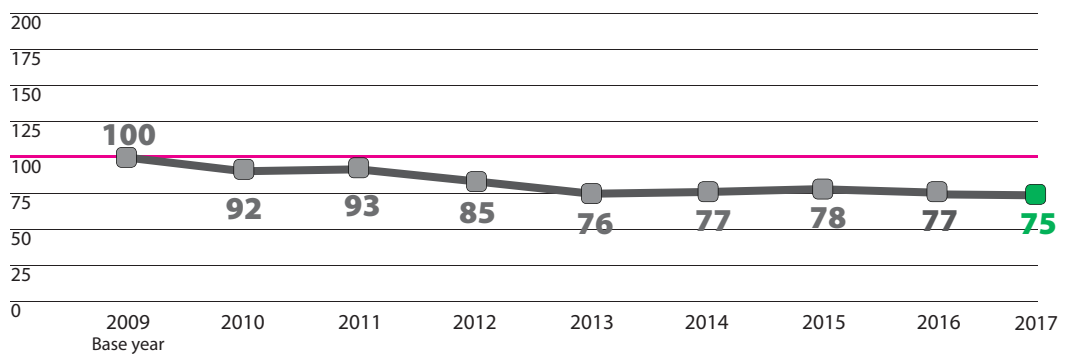
Base Years	2009	8,951	daily route miles
	2010	8,244	
	2011	8,298	
	2012	7,641	
	2013	6,787	
	2014	6,911	
	2015	6,963	
	2016	6,911	
	2017	6,717	

Data Source: Chester County Planning Commission

Index value formula:
$$\left(\frac{\text{Daily route miles Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{6,717}{8,951} \right) \times 100 = 75$$

Index trend line



Interpretation

The number of public transportation route miles decreased modestly in 2017, reflecting a stabilization of service after several years of continued decline. Rail service miles remained close to the same as the previous year. Bus service underwent modest route modifications, but with no significant net increase or decrease of service.

Travel Time

108

Index Value

Purpose Statement

Traffic congestion was a leading issue identified by the survey and focus groups during the development of Landscapes2. Travel time is an indication of traffic congestion and factors affecting congestion, such as travel alternatives and transportation/land use connections.

Description

Average travel time on five selected highways (US 1, US 30, US 202, US 422, and PA 100) at 7:00 AM to 8:00 AM peak and 5:00 PM to 6:00 PM peak on weekdays. The average is calculated from travel throughout the entire year. This measure is expressed as average miles traveled per unit of time (30 minutes) so an increase reflects less travel time: a positive trend. As travel time on the fixed sample routes goes down, the distance traveled in 30 minutes will go up.

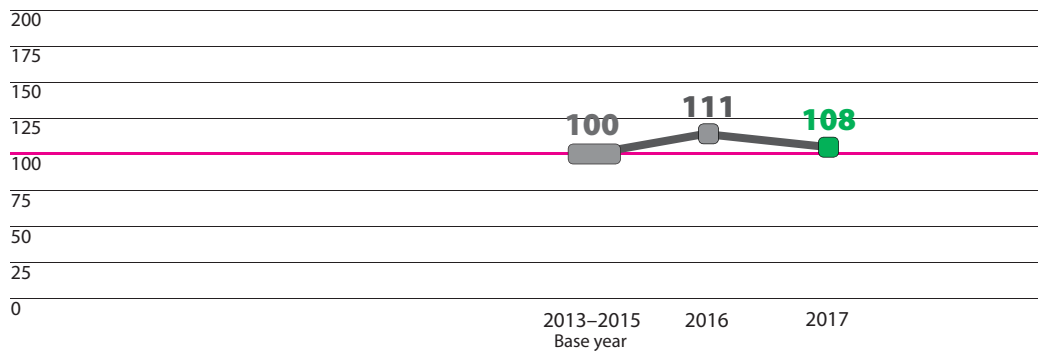
Base years	2013–2015	19.5 miles traveled in 30 minutes
	2016	21.7
	2017	21.2

Data Source: Traffic.com, daily AM and PM peak travel time estimates for the selected routes

Index value formula:
$$\left(\frac{\text{Miles traveled in 30 minutes Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{21.2}{19.5} \right) \times 100 = 108$$

Index trend line



Interpretation

Travel time data sources changed in 2015 so that information is now gathered relating to five highway locations instead of six. This new methodology indicates that in 2017, the average number of miles one could cover in a 30 minute trip dropped from 21.7 miles to 21.2 miles. Travel times have changed both up and down on the five selected highways. This decrease cannot, therefore be attributed to any one change at one location.

Farm Production

NOT AVAILABLE

Index Value

Purpose Statement

Maintaining agriculture as an important component of the county economy and culture is a goal of Landscapes2. The value of agricultural production in the county compared to the total state value is an indication of whether the county is maintaining its agricultural importance.

Description

Total market value of Chester County agricultural products as a percentage of total value in the state.

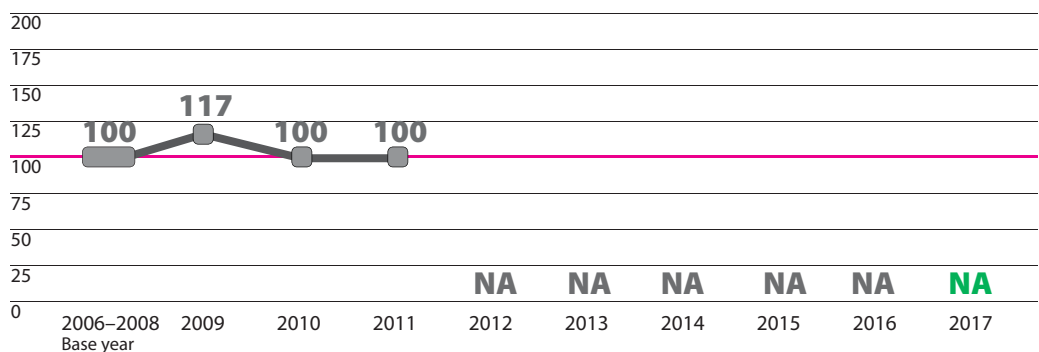
Base Years	2006–2008	8.9%	Chester County percentage of total value of agricultural products in Pennsylvania
	2009	10.5%	
	2010	9.0%	
	2011	8.9%	
	2012–2017	NA	

Data Source: U.S. Department of Agriculture, National Agricultural Statistics Service, Pennsylvania Office, Annual Statistical Bulletin

Index value formula:
$$\left(\frac{\text{Percent is produced in Chester County Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

(NA % ÷ 8.9%) X 100 = NA

Index trend line



NA: data not available

The National Agricultural Statistics Service (NASS) has discontinued the estimation program for county level cash receipts by commodity. These data are now available only from the Agriculture Census in 5 year intervals, which indicate that Chester County's percentage of total value in the state was 8.6% in 1997, 8.9% in 2002, 11.4% in 2007, and 8.9% in 2012. The results of the 2017 Census of Agriculture are scheduled for release in February 2019.

Small Business Loans

54

Index Value

Purpose Statement

A strong and diverse economy, a goal of Landscapes2, is necessary to maintain the quality of life of Chester County. The health and growth of businesses is critical to the economy. Access to credit is vital to small business survival. The number of loans is a measure of the interest and ability of businesses to update and expand their operations.

Description

Total number of small business loans made to businesses in Chester County. Small business loans are business loans whose original amounts are \$1 million or less. The most recent data available for this index is 2016.

Base years	2006–2008	22,647 loans originated (annual average)
	2009	9,264
	2010	8,537
	2011	10,130
	2012	10,753
	2013	10,006
	2014	10,952
	2015	11,236
	2016	12,244

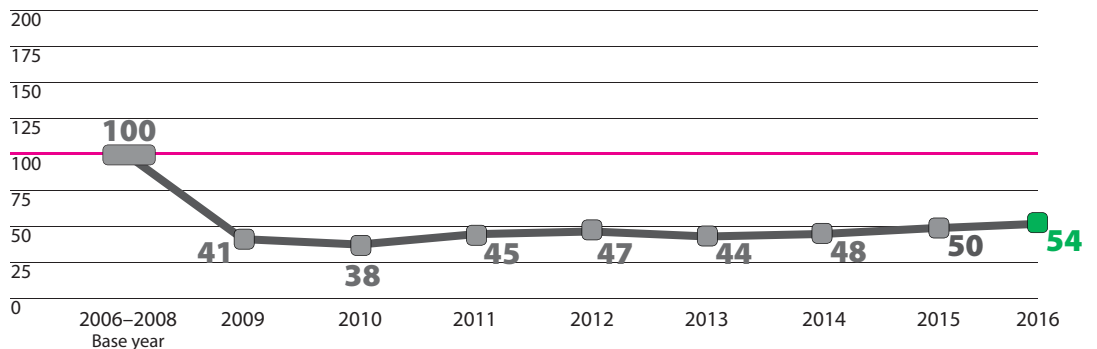
Data Source: Community Reinvestment Act (CRA), Aggregate Report Table 1-1, provided by the Federal Financial Institutions Examination Council (FFIEC)

Index value formula:

$$\left(\frac{\text{Loans originated Current year}}{\text{Loans originated Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{12,244}{22,647} \right) \times 100 = 54$$

Index trend line



Interpretation

The number of small business loans issued in Chester County increased by 9.0% in 2016. The overall level of borrowing is a sign of the continuing recovery from the recession of 2009. The economy was booming with record numbers of loans during the base years, so it is unlikely that the numbers will increase to that level of loan activity.

Stream Quality

98

Index Value

Purpose Statement

Protecting the network of natural resources is a goal of Landscapes2. Sustaining and enhancing water quality is an important objective. Stream quality is an indication of the safety of our water supply, condition of aquatic habitats, and status of the environment. Biological integrity is an excellent measure of stream quality.

Description

Average Chester County Index of Biological Integrity (CC-IBI) rating of eighteen stream samples in the county. The CC-IBI gives ratings for benthic-macroinvertebrate samples collected from sites in the Stream Conditions of Chester County Biological Monitoring Network. The sites are rated on a scale of 0 to 100 with 100 being the best quality. The measure uses the average of the ratings for the eighteen sample sites. The most recent data available for this index is 2016.

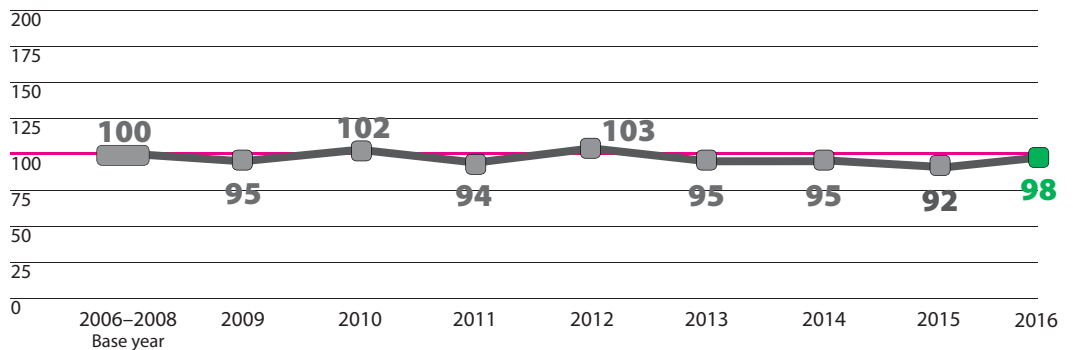
Base Years	2006–2008	62 (average CC-IBI rating)
	2009	59
	2010	63
	2011	58
	2012	64
	2013	58
	2014	58
	2015	56
	2016	60

Data Source: Chester County Water Resources Authority providing U.S. Geological Survey data

Index value formula:
$$\left(\frac{\text{Average CC-IBI rating Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{60}{62} \right) \times 100 = 98$$

Index trend line



Interpretation

Stream quality ratings in 2016 went down at ten of the eighteen monitored sites in comparison to 2015. However, quality went up at eight streams resulting in a positive move in the Index value overall. Over time, this measure has fluctuated between slightly above and slightly below the base showing an overall maintenance of stream quality levels.

Air Quality

134

Index Value

Purpose Statement

Protecting, restoring, and maintaining the network of natural resources is a goal of Landscapes2. Air quality in the Philadelphia region is a signal of the magnitude of pollutants and their impacts on the environment and public health.

Description

Percent of days with an Air Quality Index (AQI) rating designated as “good” for both ozone and fine particle pollution (PM2.5) in the Philadelphia-Camden-Wilmington CMSA. The AQI is an index for reporting daily air quality. Ground-level ozone and airborne particles pose the greatest threat to health. Days rated “good” indicate satisfactory air quality with air pollution posing little or no risk to public health. The region is used because of the regional nature of air quality.

Base years	2013–2014	28.7%	of days rated good for both ozone and particulate pollution
	2016	39.6%	
	2017	38.5%	

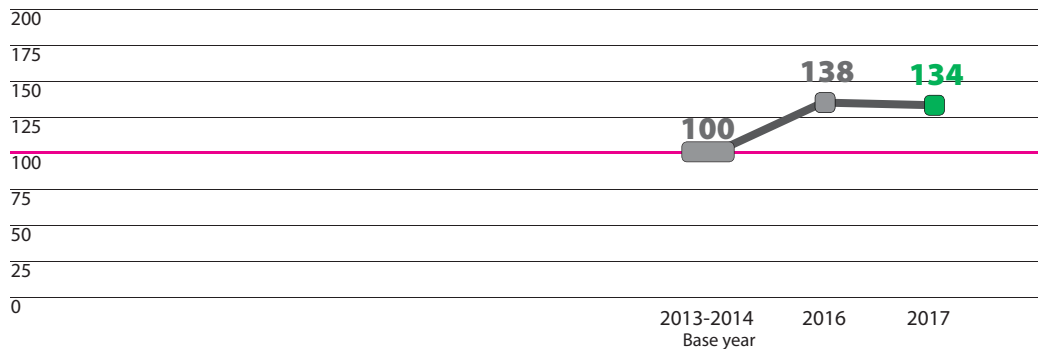
Data Source: U.S. Environmental Protection Agency (EPA), Air Quality Index (AQI)

Index value formula:

$$\left(\frac{\text{Percent of days rated good for air quality Current year}}{\text{Base year}} \right) \times 100 = \text{Index value}$$

$$\left(\frac{38.5\%}{28.7\%} \right) \times 100 = 134$$

Index trend line



Interpretation

In 2015, the EPA upgraded its methodology for determining the AQI index and posted newly calculated figures for past years. This change required a revision to the AQI base year data. The result is that the 2016 and 2017 index were much higher than the new base year index, which is set at 100. This increase, reflecting improvements in air quality, is part of a larger overall trend in the region. The annual “State of the Air” reports by the American Lung Association for 2016 and 2017 show that there have been marked improvements in terms of ozone and particle pollution in Philadelphia, and similar improvements in its suburbs. These improvements appear to be due to a combination of weather and reduced emissions from industrial uses and power plants.

Municipal Ordinance Amendments

108

Index Value

Purpose Statement

The county must work in partnership with the municipalities to implement Landscapes2. Municipalities have the authority to regulate land use and development. Municipal plans and ordinances regulating development that are consistent with Landscapes2 policies indicate cooperation to achieve the desired development pattern.

Description

Percent of relevant municipal plan and ordinance amendments adopted that are consistent with Landscapes2 policies.

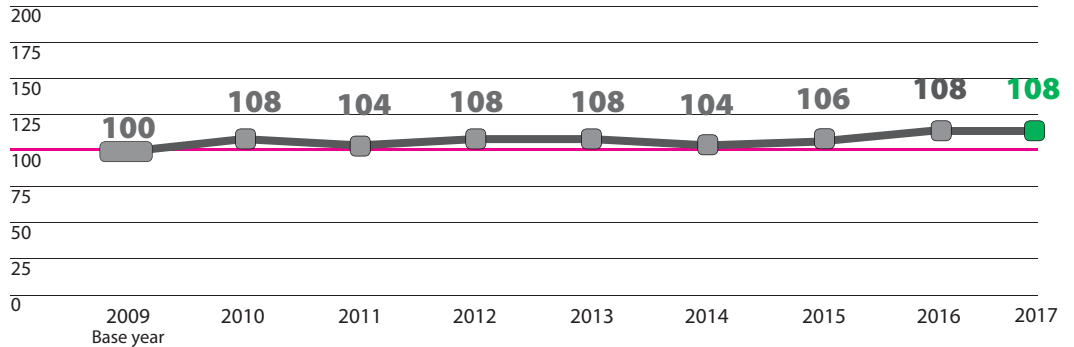
Base Years	2009	92.9%	of amendments consistent with Landscapes2
	2010	100%	
	2011	96.6%	
	2012	100%	
	2013	100%	
	2014	96.8%	
	2015	98.5%	
	2016	100%	
	2017	100%	

Data Source: Chester County Planning Commission

Index value formula:
$$\left(\frac{\text{Percent of adopted amendments consistent with Landscapes2 Current year}}{100\%} \div \frac{\text{Base year}}{92.9\%} \right) \times 100 = \text{Index value}$$

$(100\% \div 92.9\%) \times 100 = 108$

Index trend line



Interpretation

In 2017, all 105 amendments adopted by municipalities were consistent with Landscapes2. This was the seventh consecutive year that over 95% of reviewed amendments were consistent with Landscapes2. This consistency is critical for successfully implementing the goals of Landscapes2.