

# Regulatory Update



- MS4 Sustainability Strategy (MS6)
  - Collaborative Effort
  - Six elements for Sustainable MS4 Programs
  - What's in for the State, EPA and Local Governments
  - The Assessment
  - Action Plans
  - The Closer
- Minimum Design Criteria (MDC)
  - 15A NCAC 2H .1050 through .1062
  - SW Design Manual
  - Primary SCM vs Secondary SCM





# What's in it for the State/EPA

## MS4 Sustainability Strategy (MS6)

- Ensures a high level of compliance
- Allows State/EPA to leverage limited resources - promoting effective use of resources allowing State/EPA to focus on local governments that do not have sustainable programs
- Promotes cost effective programs
- Strengthen programs through adaptive management leading to improved water quality
- Promotes Smart Growth and Facilitates Economic Development
- Stronger Together, Smarter Together, Better Together

# What's in it for Local Governments

## MS4 Sustainability Strategy (MS6)

- Ensures a high level of compliance
- Allows Local Governments to leverage limited resources - promoting effective use of resources
- Promotes cost effective programs
- Strengthen programs through adaptive management leading to improved water quality
- Promotes Smart Growth and Facilitates Economic Development
- Minimizes liability
- Less oversight by regulatory agencies
- Waive annual NPDES MS4 program report
- Better understanding of why you are doing what you're doing
- Certain comfort level that what you're doing is what everyone else is doing
- Stronger Together, Smarter Together, Better Together

# MS4 Sustainability Strategy (MS6)

- Maintain a compendium/clearing house of documents
  - Sample Policies, SOPs, checklist, calendars, turnover folders, Asset Management Plan
- Develop tools for conducting a Assessment (also known as ISO14000 GAP Analysis)
  - Web-site based (or smart phone app)

# THE ASSESSMENT

## Identify Positive Findings

**Program:** AIR-GEN

**Question:** F-10050-00010

Does the installation ensure, through field visits and the ECE Program, cooperation and compliance with Federal, state, and local regulatory agencies with regard to air quality regulations?

**Regulations:** MCO 6300.8

**Comment:**

Efforts by the NREAO in maintaining communication with regulatory agencies and internal evaluation, including use of ECE Program elements, have enabled the facility to maintain a high level of compliance with air quality requirements. These procedures have also allowed the facility to identify and correct in a timely manner deficiencies identified in compliance requirements.

# THE ASSESSMENT

## Identify areas where programs can be strengthened

**Question:** S-00295-00730

Does the installation ensure that the work area is isolated to prevent access by unprotected persons?

**Regulations:** SCR61-86.1\X(B)(1)(b)

A May 1997 MCAS Asbestos Survey identified asbestos pipe insulation in Building 74 as significantly damaged. That information was conveyed to personnel in charge of operations at Building 74 at the time of the survey. The room where the insulation was located was isolated and secured from use by personnel. In December of 1999 NREAO found that locks securing the area had been removed and personnel were utilizing the area. Upon identification of the potential for personnel exposure to asbestos from damaged pipe insulation, a work order was issued for its removal.

**Root Cause:** [pull down menu]



# THE ASSESSMENT

## Identify Recommendations

**Question:** S-00295-00730

Does the installation ensure that the work area is isolated to prevent access by unprotected persons?

**Regulations:** SCR61-86.1\X(B)(1)(b)

Base needs to identify and address training needs.

# THE ASSESSMENT

- Year 1, 2 and 4 - Self Assessment (Year 1, 2 and 4)
- Year 3 - Assessment by Peer
- Year 5 - Assessment by a third Party
- Use the list of questions developed by APWA, DEQ, and SWANC
- “DRAFT” assessment otherwise include a disclaimer – that the assessment is not conducted by a regulatory agency
- Assessment can be conducted at the request of the City’s Attorney and the report can be “protected” under attorney-client privilege
- Notify DEQ that the assessment has been completed

# THE ACTION PLAN

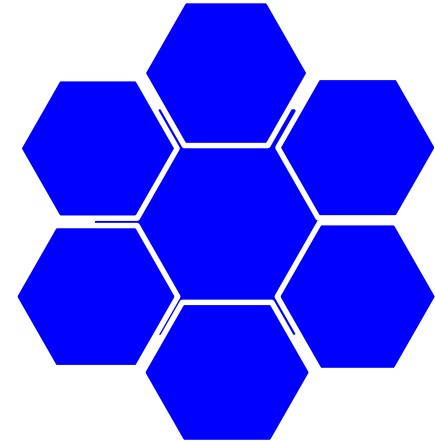
- Developed and implemented by regulated entity
- Develop specific actions (including no action) that address both the deficiencies and the root causes of those deficiencies
- Identify specific time frames and deadlines when the actions are to be completed
- Notify DEQ that the Action Plan has been developed
- Notify DEQ that the Action Plan has been completed
- Assessment and Action Plan posted or made available to the State or EPA upon request

## *Minimum Design Criteria (MDC)*

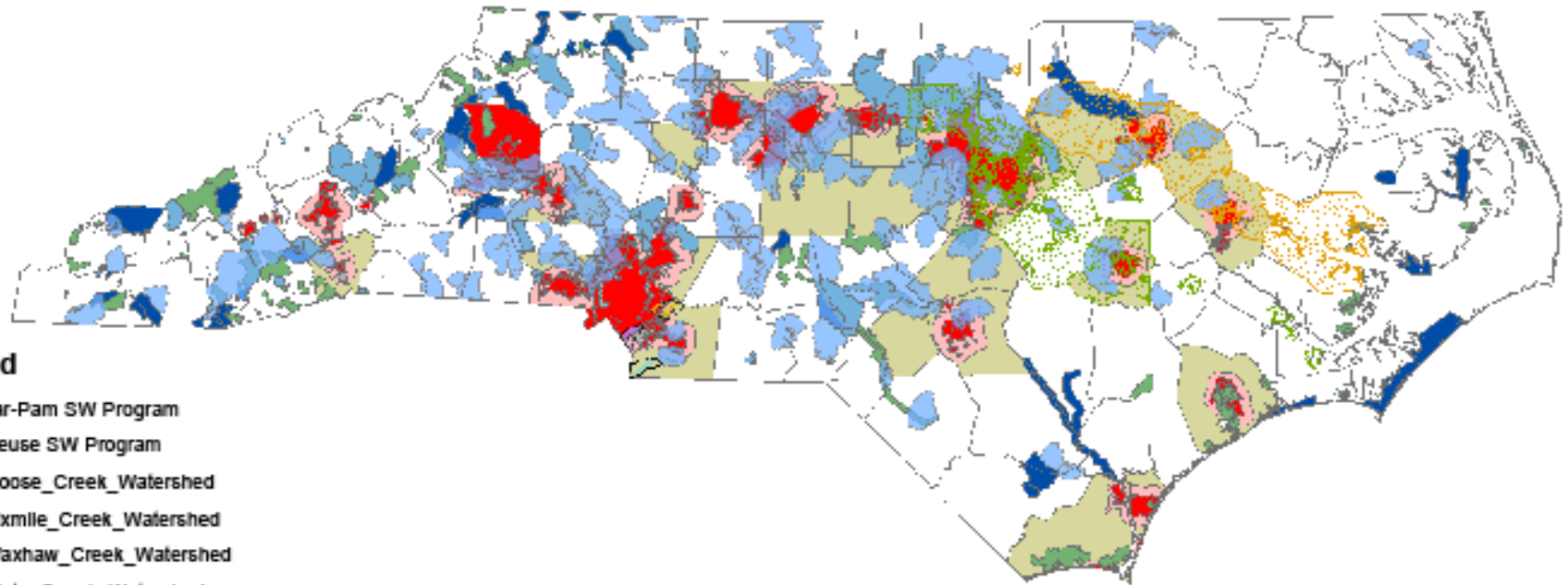
- **MDC & Fast Track:** § 143-214.7B requires DEQ to work with stakeholders to develop Minimum Design Criteria and a Fast-Track Permitting Process.
- **Rules Review & Re-Adoption:** § 150B-21.3A directs state agencies to review and update their rules every 10 years.

# *The MDC Team*

Engineering/design community (8)  
Home Builder's Association (1)  
Construction (1)  
Local government (4)  
Environmental Group (2)  
Landscape Architect (1)  
Academia (2)  
Soil Scientist (1)  
DOT (1)  
DEQ(4)



# MDC to Cover Whole State

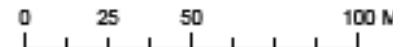


## Legend

- Tar-Pam SW Program
- Neuse SW Program
- Goose\_Creek\_Watershed
- Sixmile\_Creek\_Watershed
- Waxhaw\_Creek\_Watershed
- Water Supply Watersheds
- ORW
- HQW
- HQW - Coastal Freshwater
- HQW - Coastal Saltwater (Non-SA)
- Exempt Municipalities and ETJs (as of December 3, 2007)
- NPDES Municipalities
- NPDES Phase II ETJs - (January 2007)
- NPDES Counties
- Phase II MSIs
- Phase II Tipped Counties (Post-Construction)

\*Post-Construction requirements still apply inside exempted municipality boundaries and will be implemented by DWQ or delegated authority (e.g., County).

2/1/2008



*New Lingo!*

~~BMP~~  
~~SCM~~

~~85% TSS Removal~~

**Primary & Secondary SCMs**



# *MDC Team Process*



The “old” BMP Manual’s list of requirements for SCMs.

- Keep, remove or modify.
- Result: shorter, more objectives-based.
- More flexibility & responsibility for designers.
- Had to be included in the rules.





# Old Stormwater Rules

- .1001 Stormwater Management Policy
- .1002 Definitions
- .1003 Stormwater Management: Coverage: Application: Fees
- .1005 Stormwater Requirements: Coastal Counties
- .1006 Stormwater Requirements: High Quality Waters
- .1007 Stormwater Requirements: Outstanding Resource Waters
- ~~.1008 Design of Stormwater Management Measures~~
- .1009 Staff Review and Permit Preparation
- .1010 Final Action on Permit Applications to the Division
- .1011 Modification and Revocation of Permits
- .1012 Delegation of Authority
- .1013 General Permits
- .1014 Stormwater Management for Urbanizing Areas
- ~~.1015 Urbanizing Areas Definitions~~
- .1016 Development in Urbanizing Areas
- .1017 Post-Construction Practices
- .1020 Universal Stormwater Management Program



# New Stormwater Rules

.1001	Post-Construction Stormwater Management	}	<i>Framework</i>
.1002	Definitions		
.1003	MDC for All Subject Projects	}	<i>Program Requirements</i>
.1016	Development in Urbanizing Areas: Applicability		
.1017	NPDES and Urbanizing Areas: Post-Construction		
.1018	Urbanizing Areas: Delegation		
.1019	Coastal Counties: MDC		
.1020	Universal Stormwater Management Program		
.1021	Non-Coastal County HQW and ORW: MDC		
.1040	Permit Administration	}	<i>Permit Administration</i>
.1041	General Permits		
.1042	Standard Permitting Process		
.1043	Fast Track Permitting Process: Authorization to Construct		
.1044	Fast Track Permitting Process: Final Permit		
.1045	Permit Transfers and Renewals		
.1050	<b>MDC for all Stormwater Control Measures</b>	}	<i>MDC's</i>
.1051-.1062	<b>MDC for Individual SCMs</b>		

**The MDC went into effect on  
January 1, 2017.**

Updated Stormwater Design Manual:

Partial draft public posted on 1/4/17

Complete draft on 1/31/17

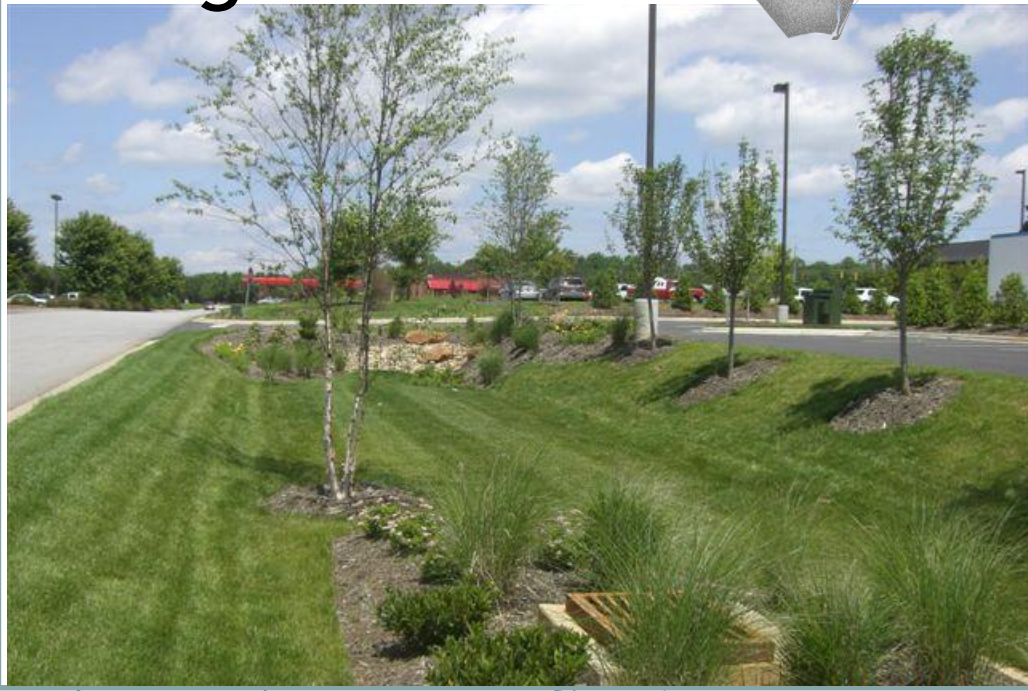
Finalized on 4/1/17



P



North Carolina  
**Stormwater  
Design Manual**



Rules = Requirements

Manual = Guidance



## *Other Updates*

O&M-EZ already posted  
Supplement-EZ will be posted 1/31/17

Also, we're working on on-line application forms  
for projects under DEQ's authority, hopefully  
ready around April 2017....



# Primary SCM

From 2H .1002:

A wet pond, SW wetland, infiltration system, sand filter, bioretention cell, permeable pavement, green roof, rainwater harvesting, or an approved new stormwater technology that is in accordance with the MDC.

*Can stand alone when designed per the MDC to treat the design storm depth.*



# Secondary SCM

From 2H .1002:

An SCM that does not achieve the annual reduction of TSS of a Primary SCM but can be used in a treatment train with a primary SCM to provide pre-treatment or hydraulic benefits.

*May not stand alone; must be used with another SCM.*



## Primary SCMs

Wet Pond  
Stormwater Wetland  
Infiltration System  
Sand Filter  
Bioretention Cell  
Permeable Pavement  
Rainwater Harvesting  
Green Roof

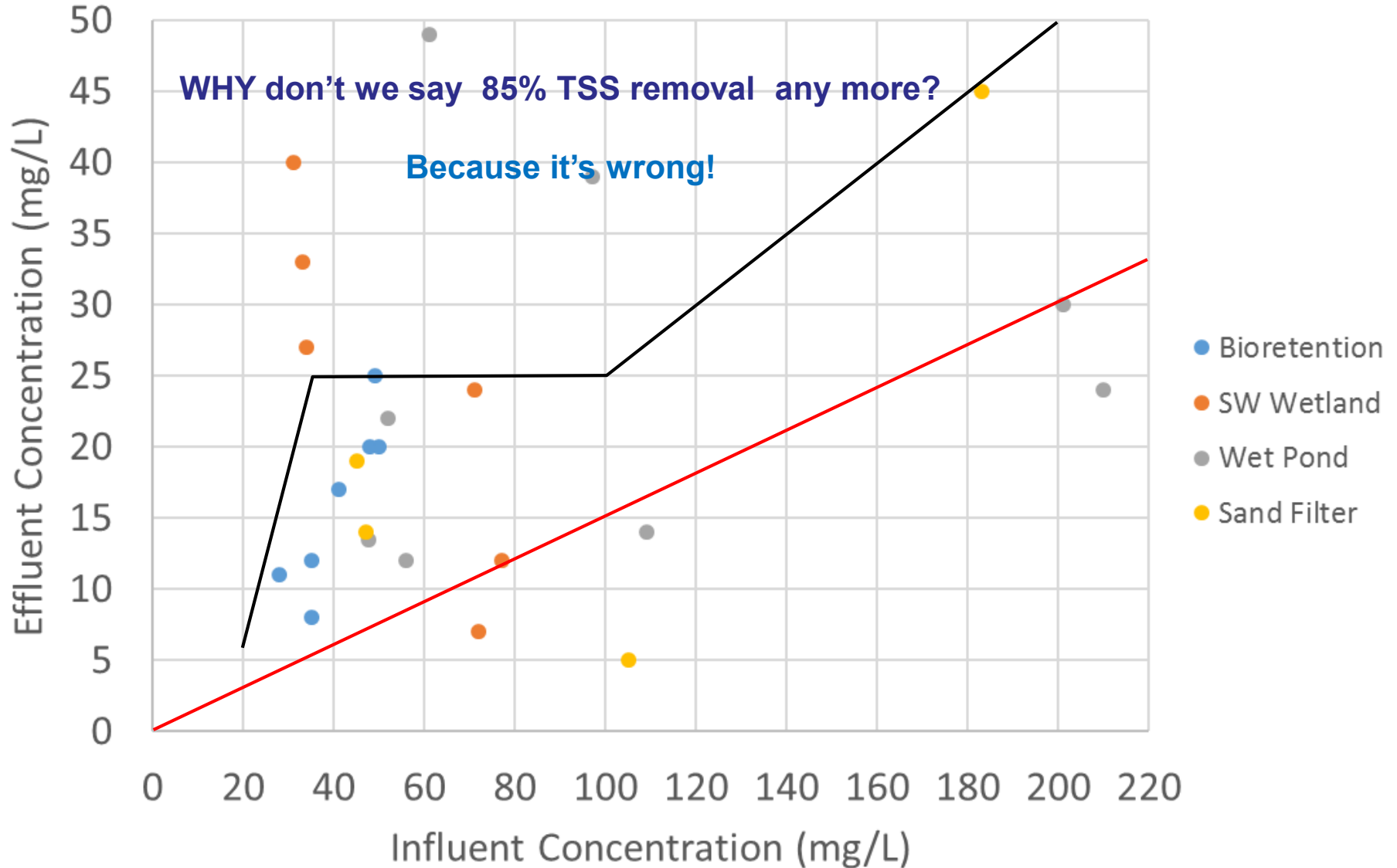
## Secondary SCMs

DIS  
LS-FS  
Pollutant Removal Swale  
Dry Pond





# SCM Performance per Research



# *Options in New Rules*

Runoff treatment: the SW runoff from all of the built-upon area of a project at build-out is treated in primary SCMs or a combo of Primary and Secondary SCMs that provides equal or better treatment. (one Drainage Area, one Primary SCM)

Runoff volume match (aka LID): the annual runoff volume after development is not more than 10% higher than the amount annual runoff volume before development.  
(5% in SA waters)



# Questions?

DEQ/DEMLR/Stormwater Program

Mike Randall,  
(919) 807-6734

Cell: (919) 389-7801

E-mail: [mike.randall@ncdenr.gov](mailto:mike.randall@ncdenr.gov)

1612 Mail Service Center, Raleigh NC 27699-1612



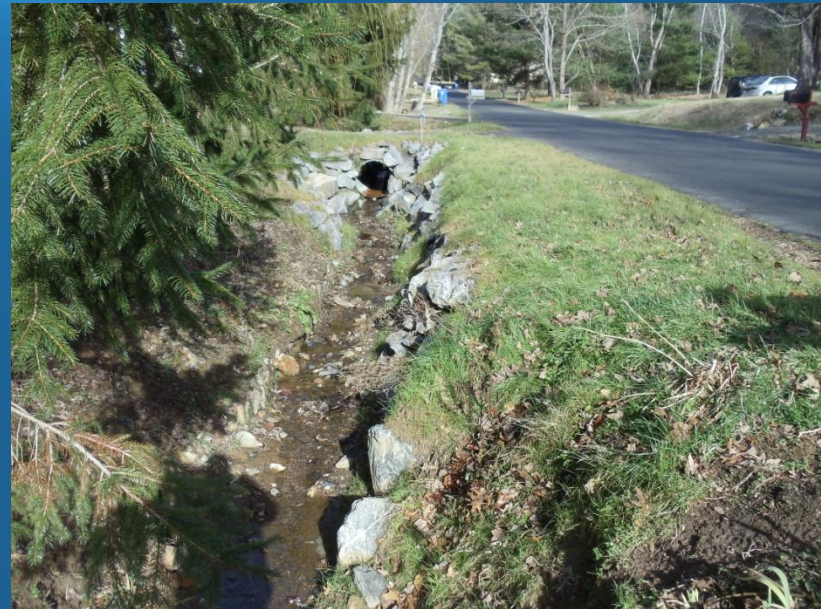
# Legislative Update 2017

## ▣ Stormwater

- Stormwater Enterprise Fund Incentive Credits
- 30-foot Aquatic Buffer
- Zoning changes – small infill, subdivisions
- State updates - MDC and Storm EZ
- UDO update

## ▣ Erosion & Sediment Control

- 500 sq. ft. land disturbance
- Steep Slopes
  - ▣ Constructed slopes
  - ▣ Zoning





# Stormwater Enterprise Fund Incentive Credits

- 20% credit for each:
  - Sites that retain 25 year storm, treat 90% TSS, first 1" rainfall
  - Sites that retain 50 year storm, treat 95% TSS, first 1" rainfall
  - Sites that retain 100 year storm, treat 95% TSS, first 1" rainfall
  - Sites delegated through NCDEQ, with their own NPDES Phase II Stormwater Permit
  - Sites that ha a current industrial stormwater permit issued by NCDEQ.
- Credits can be combined up to 60%





# Legislative Update 2017

- ▣ 30' Aquatic Buffer
- ▣ Zoning changes:
  - Subdivisions
  - Small Scale Residential Infill lot changes





# Small Scale Residential Infill

## Establish Maximum Impervious Standards

- Create limits of development for all residential properties that correspond to impervious surfaces. Property owners would have the option of exceeding maximum limits through the provision of stormwater capture infrastructure

Zoning District	RS2	RS4	RS8	RM6	RM8	RM16
	Single Family Development					
Impervious Surface Max.	20%	30%	50%	40%	50%	65%
				Multifamily Development		
Impervious Surface Max.				40%	50%	50%



# Demographics & Development

## A Regional Overview

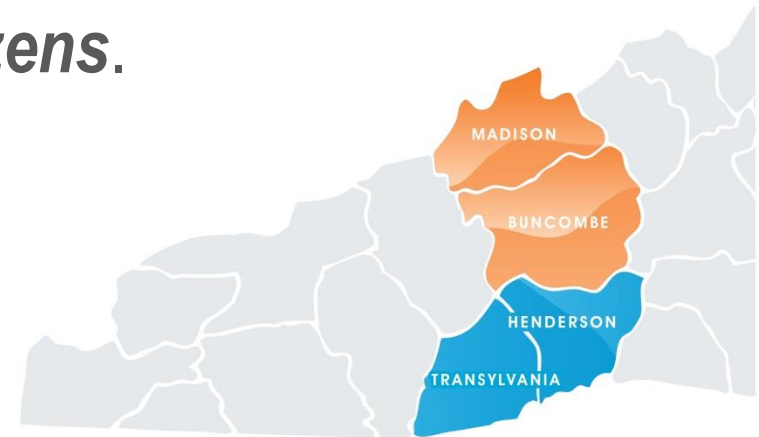
### 2017 WNC Stormwater Summit

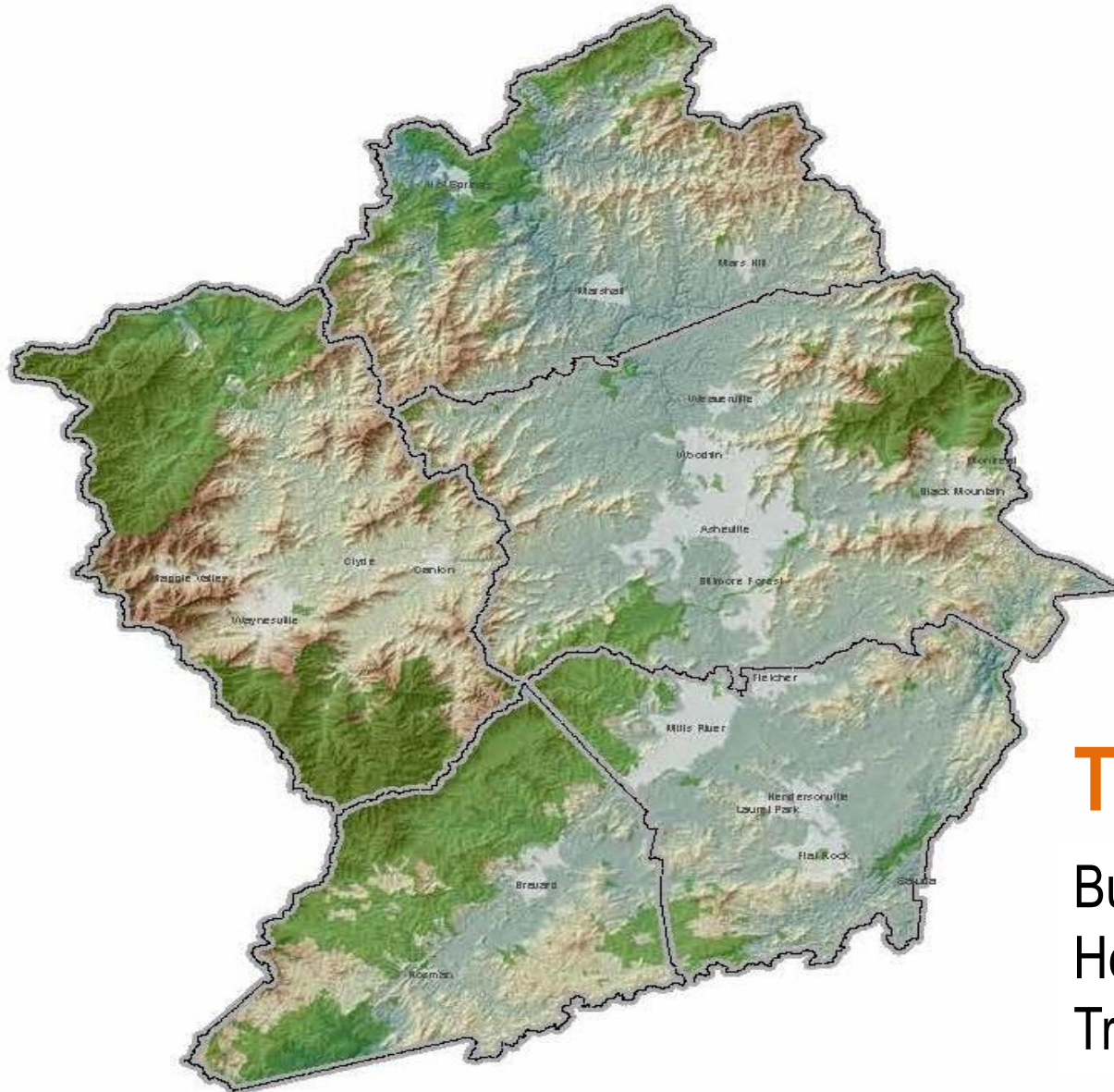




## Who We Are:

Land of Sky Regional Council is a multi-county, **local government planning and development** organization. We reach across county and municipal borders providing **technical assistance** to local governments and **administer projects and programs** which **benefit our region's citizens**.





## The Region:

Buncombe, Haywood,  
Henderson, Madison &  
Transylvania Counties

**REGIONAL FACT SHEET**

Includes Buncombe, Haywood, Henderson, Madison and Transylvania counties



**POPULATION** <sup>2</sup>

2010 Census <sup>1</sup>  
**457,864**

2012 Estimate  
**465,510**

2020 / 2030 Projection <sup>3</sup>  
**503,754 / 547,838**

Female  
**52%**

Male  
**48%**

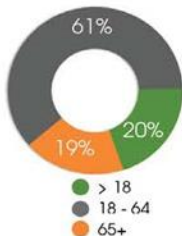
Minority  
**10.8%**

Median Age  
**44.9**

Age 65+  
**87,631**

Under 18  
**92,041**

Total Population %



**HOUSING** <sup>2</sup>

Median Home Value  
**\$172,600**

Homeowner Vacancy Rate  
2.1%

Rental Vacancy Rate  
7.2%

Occupied Housing Units  
196,157

% of Units with No Vehicle Available  
5.8%

**HIGHER EDUCATION**

- Montreat College
- Mars Hill University
- WCU Biltmore Park
- Lenior-Rhyne University
- AB Technical Community College
- Blue Ridge Community College
- Wingate University
- Haywood Community College
- UNC Asheville
- Warren Wilson
- South College
- Brevard College
- Hendersonville

**LARGEST PRIVATE SECTOR EMPLOYERS** <sup>5</sup>

- Memorial Mission Hospital, Inc.
- Ingles Market, Inc.
- Wal-Mart Associates, Inc.
- Eaton Corporation
- The Biltmore Company
- Blue Ridge Paper Products
- Park Ridge Health
- Margaret R Pardee Memorial Hospital

**ECONOMIC** <sup>2</sup>

Median Household Income  
\$44,460

Per Capita Income  
\$24,175

Per Capita Living Wage <sup>9</sup>  
\$20,584

County Property Tax <sup>7</sup>  
N/A

% of Families Below Poverty Level  
11%

Food Insecurity Rate <sup>6</sup>

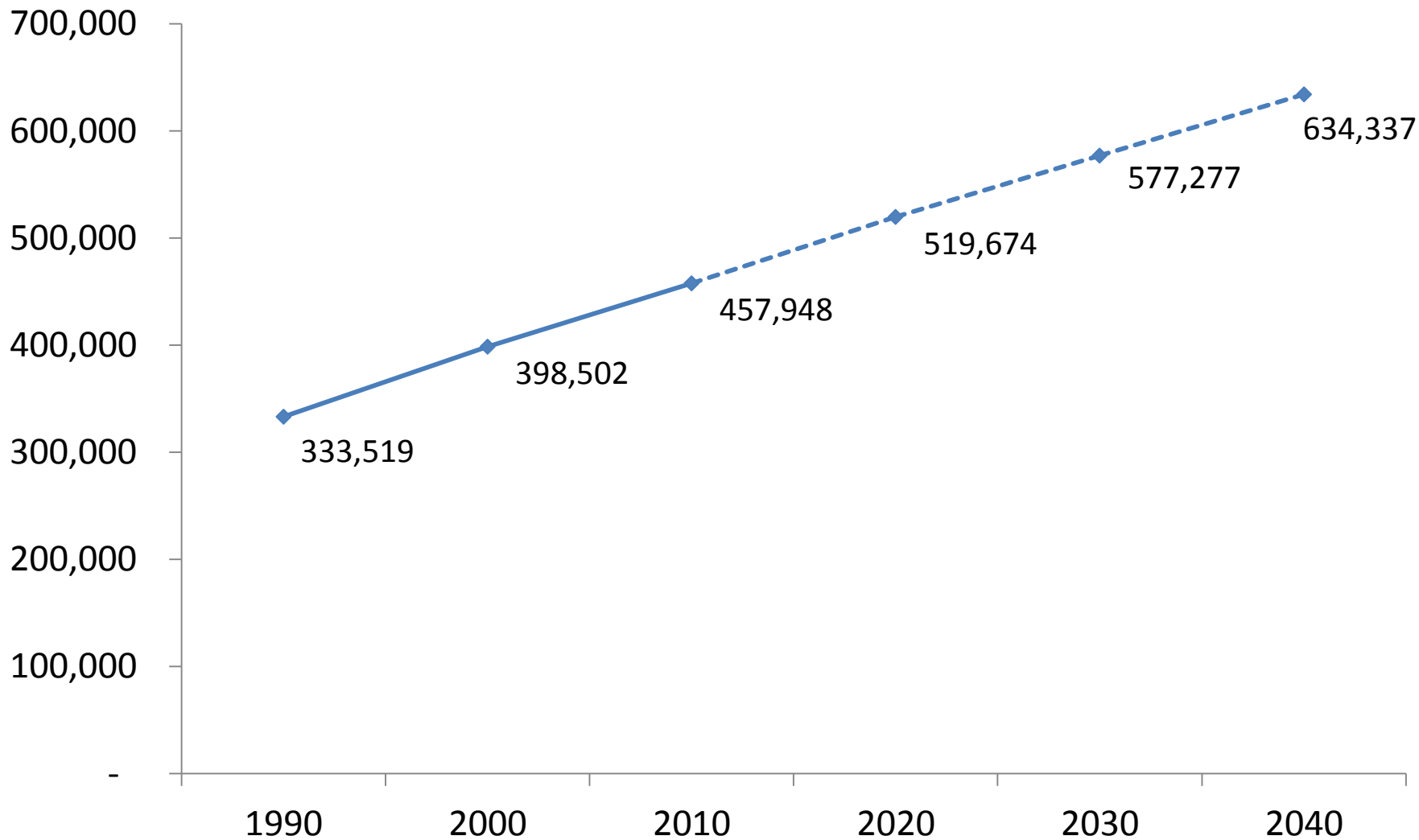


**LARGEST INDUSTRIES** <sup>4</sup>

Job Comparison	2010 / 2014		Change in Jobs	2014 Earnings Per Worker <sup>with Benefits</sup>
Government	30,367	28,947	-5%	\$55,075
Health Care and Social Assistance	29,825	32,531	9%	\$56,114
Retail Trade	24,928	26,517	6%	\$28,892
Accommodation and Food Services	20,551	23,890	16%	\$19,298
Manufacturing	18,920	19,865	5%	\$61,255
Construction	13,272	11,941	-10%	\$36,019
Other Services (except Public Administration)	10,920	11,782	8%	\$22,882
Admin, Waste Mgmt, & Remediation Services	10,438	11,633	11%	\$29,317
Professional, Scientific, & Technical Services	7,419	8,549	15%	\$50,690
Wholesale Trade	5,224	5,142	2%	\$29,444

Sources  
 1. US Census Bureau, 2010 Census  
 2. US Census Bureau, American Community Survey, 5 Year Data, 08-12  
 3. North Carolina Office of Budget and Management  
 4. Economic Modeling Specialists, Intl.  
 5. NC Commerce, Labor and Economic Analysis Division (April 2014)  
 6. www.feedingamerica.org  
 7. NC Economic Development Guide  
 8. www2.fdic.gov  
 9. www.livingwage.mit.edu

# Population



# Population



2012  
EXISTING POPULATION  
457,948

2012 - 2040  
POPULATION GROWTH  
176,389



1 PERSON = 30,000 PEOPLE

Total 2040 Population = 634,337

## Growth of 39%

# Dwelling Units



2012  
EXISTING DWELLING UNITS  
232,844

2012 - 2040  
DWELLING UNITS GROWTH  
95,922

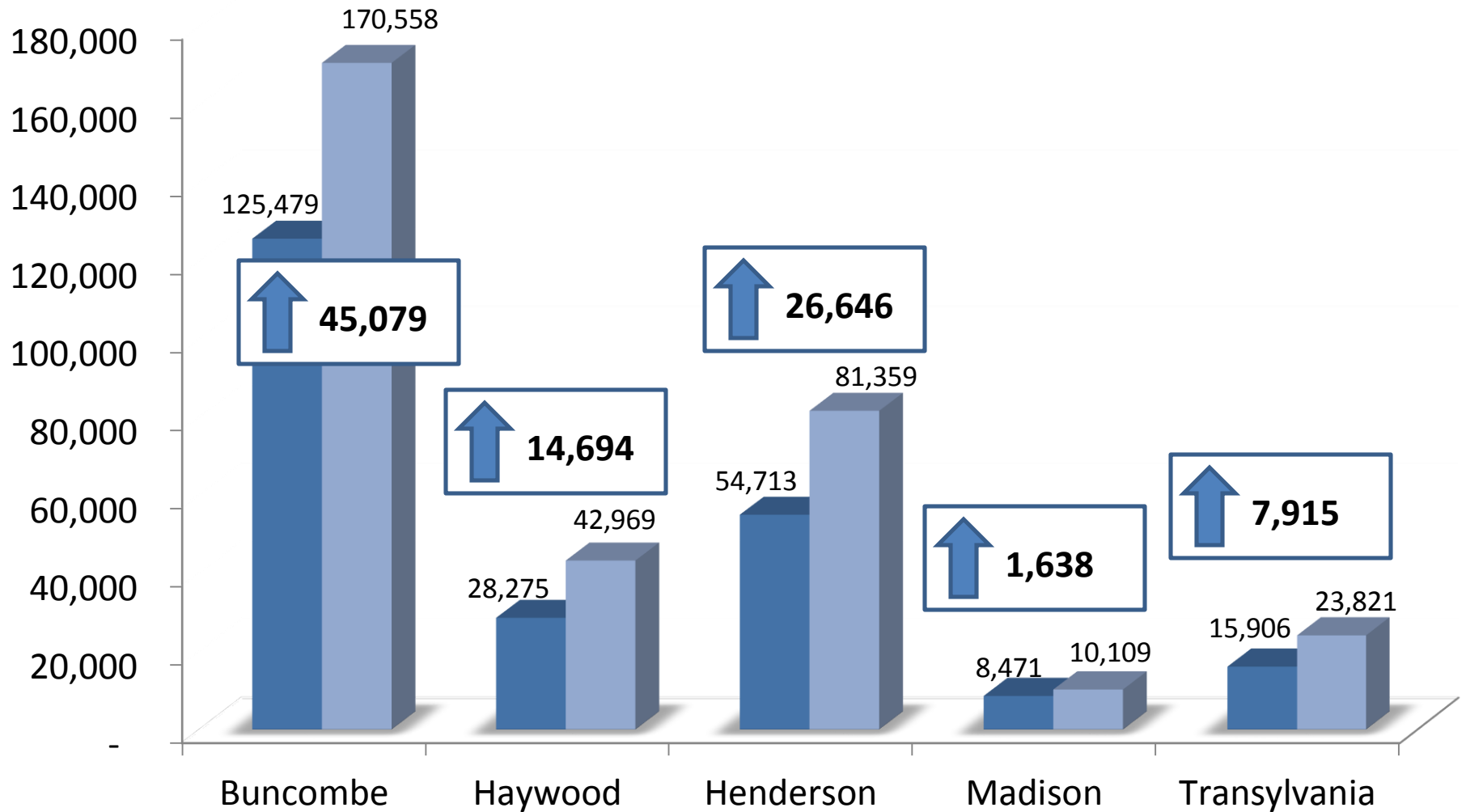


1 HOUSE = 20,000 DWELLING UNITS

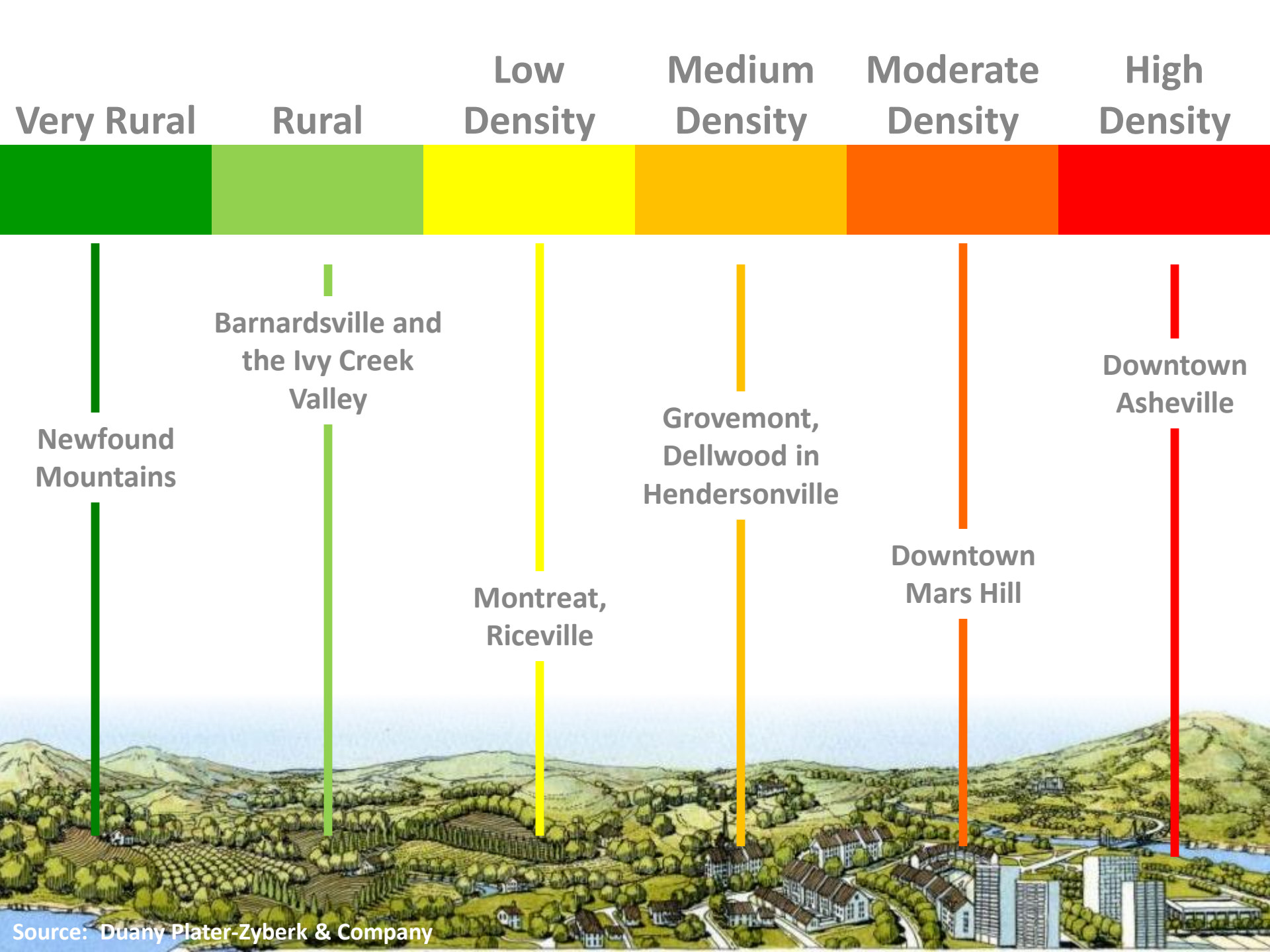
Total 2040 Dwelling Units = 328,816

## Growth of 41%

# Dwelling Units



■ 2010 Dwelling Units    ■ 2040 Dwelling Units



Very Rural

Rural

Low Density

Medium Density

Moderate Density

High Density

Newfound Mountains

Barnardsville and the Ivy Creek Valley

Montreat, Riceville

Grovemont, Dellwood in Hendersonville

Downtown Mars Hill

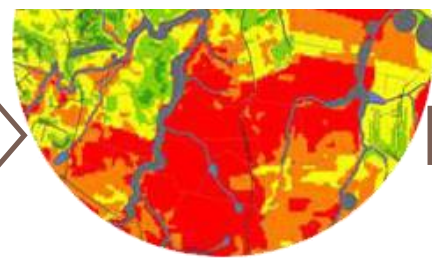
Downtown Asheville



# Land Use Model 2014 GroWNC



*Control Totals*



*Vacant Lands  
Underutilized Parcels  
(Redevelopment)*

*Allowable Densities  
(Per Adopted Land Use Plans)  
Recent Development Approvals*

*Economic Factors  
Environmental Constraints  
Local Policies & Infrastructure  
Investments*

*Parcel Based Forecasts  
Dwelling Units  
Employment*

# What if we....

1

BAU

Maintain our current path?

Business As Usual

2

EP

Focus on making this a place where talented people—and their business—want to be?

Economic Prosperity

3

RC

Prioritize the conservation of our natural and cultural resources?

Resource Conservation

4

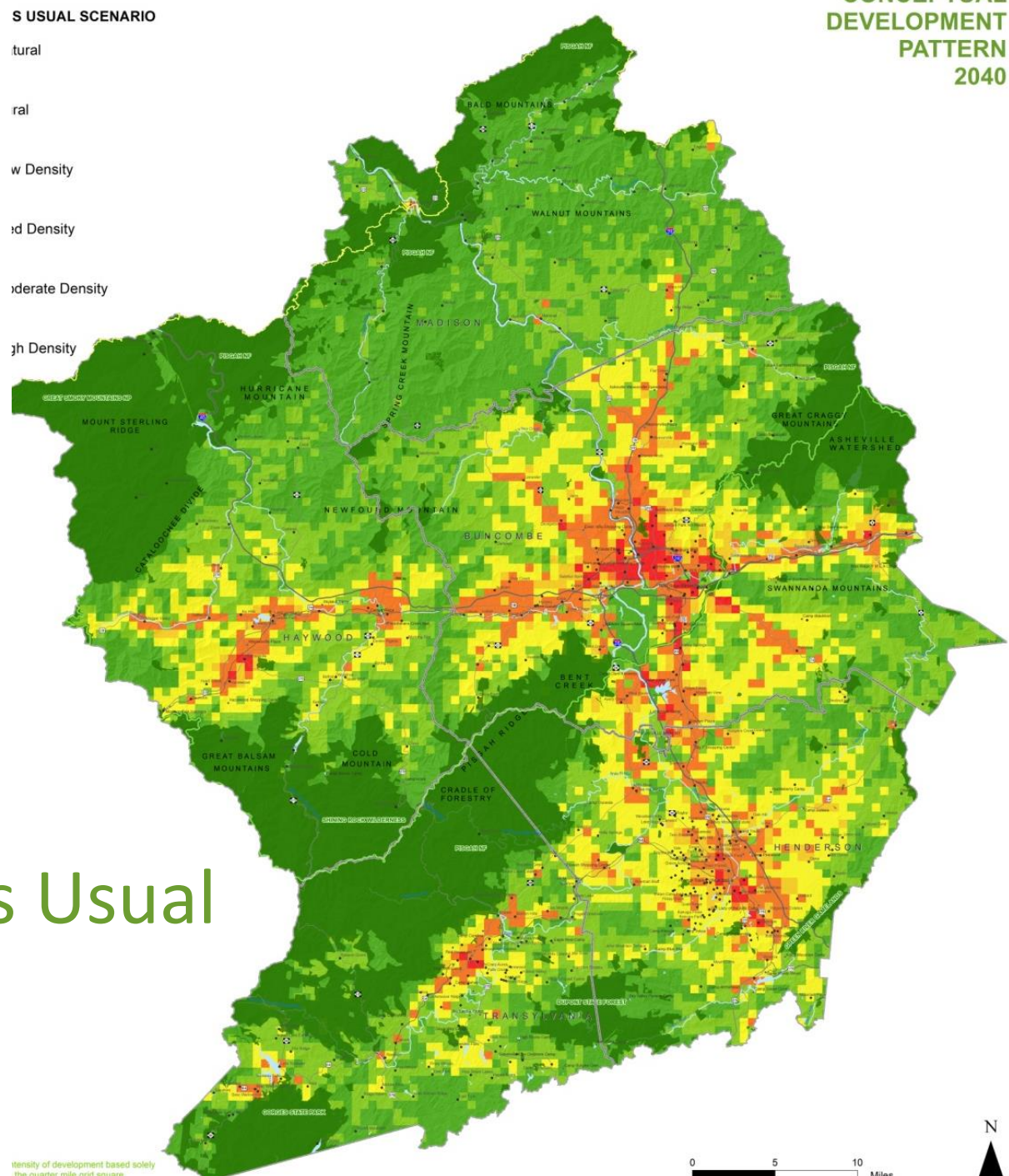
EG

Focus investment in existing communities and redevelopment opportunities?

Efficient Growth

# Development Pattern 2040

CONCEPTUAL  
DEVELOPMENT  
PATTERN  
2040



1

BAU

Business As Usual

Intensity of development based solely on the quarter mile grid square.

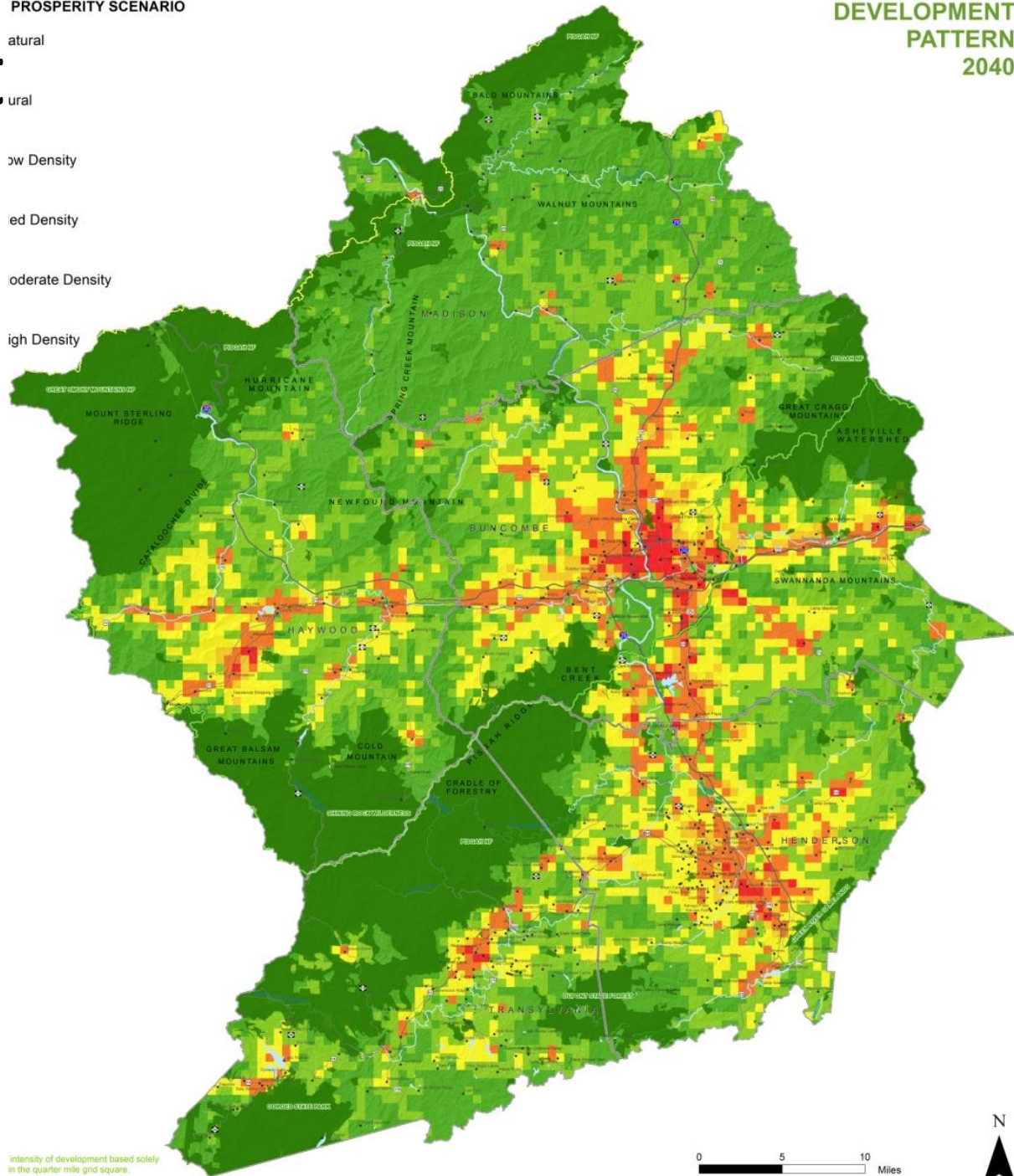


# Development Pattern 2040

CONCEPTUAL  
DEVELOPMENT  
PATTERN  
2040

PROSPERITY SCENARIO

- atural
- ural
- ow Density
- ed Density
- oderate Density
- igh Density



2

EP

Economic  
Prosperity

intensity of development based solely  
in the quarter mile grid squares.

0 5 10  
Miles

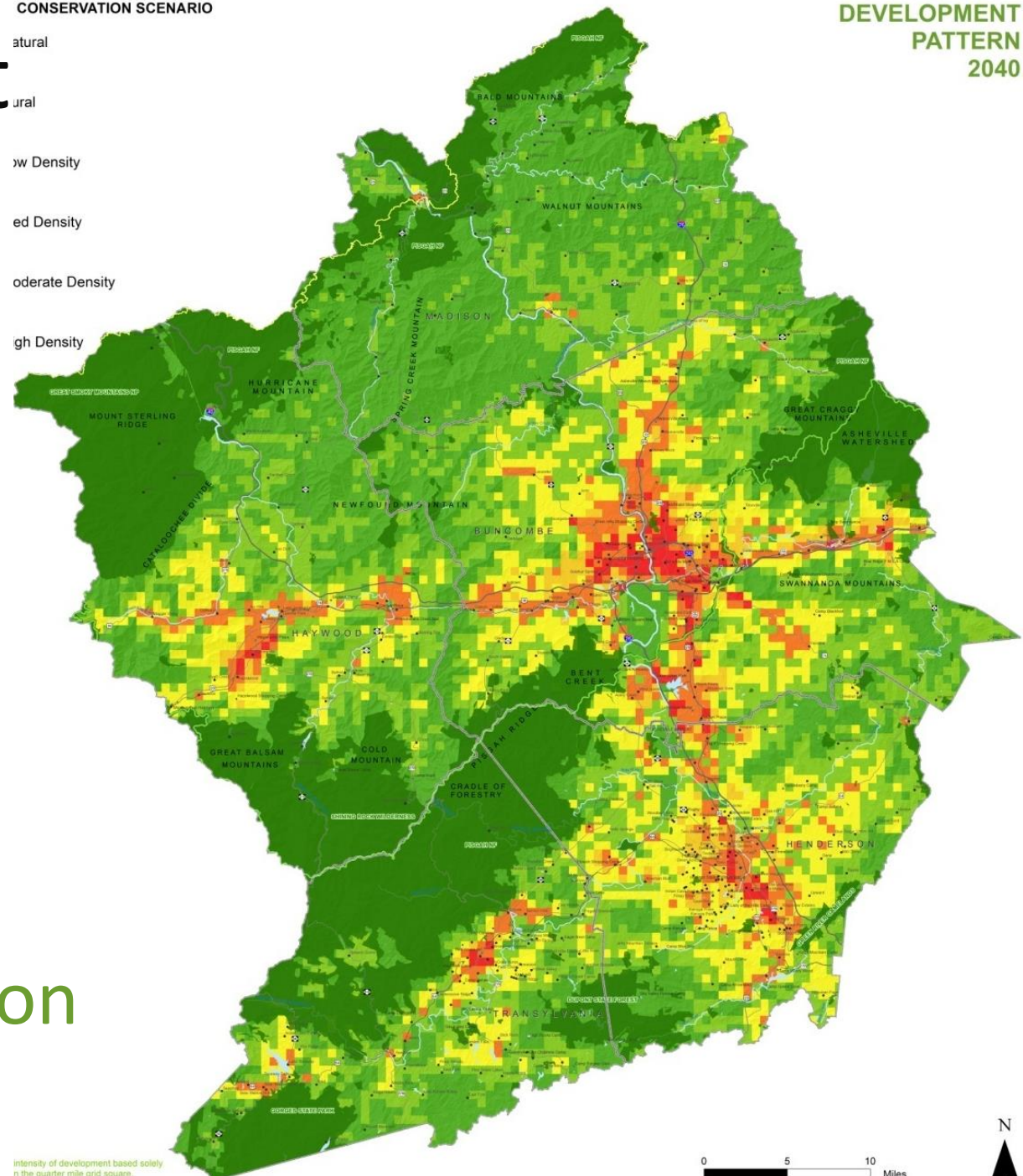
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# Development Pattern 2040

CONCEPTUAL  
DEVELOPMENT  
PATTERN  
2040

CONSERVATION SCENARIO

- atural
- ural
- ow Density
- ed Density
- oderate Density
- gh Density



3

RC

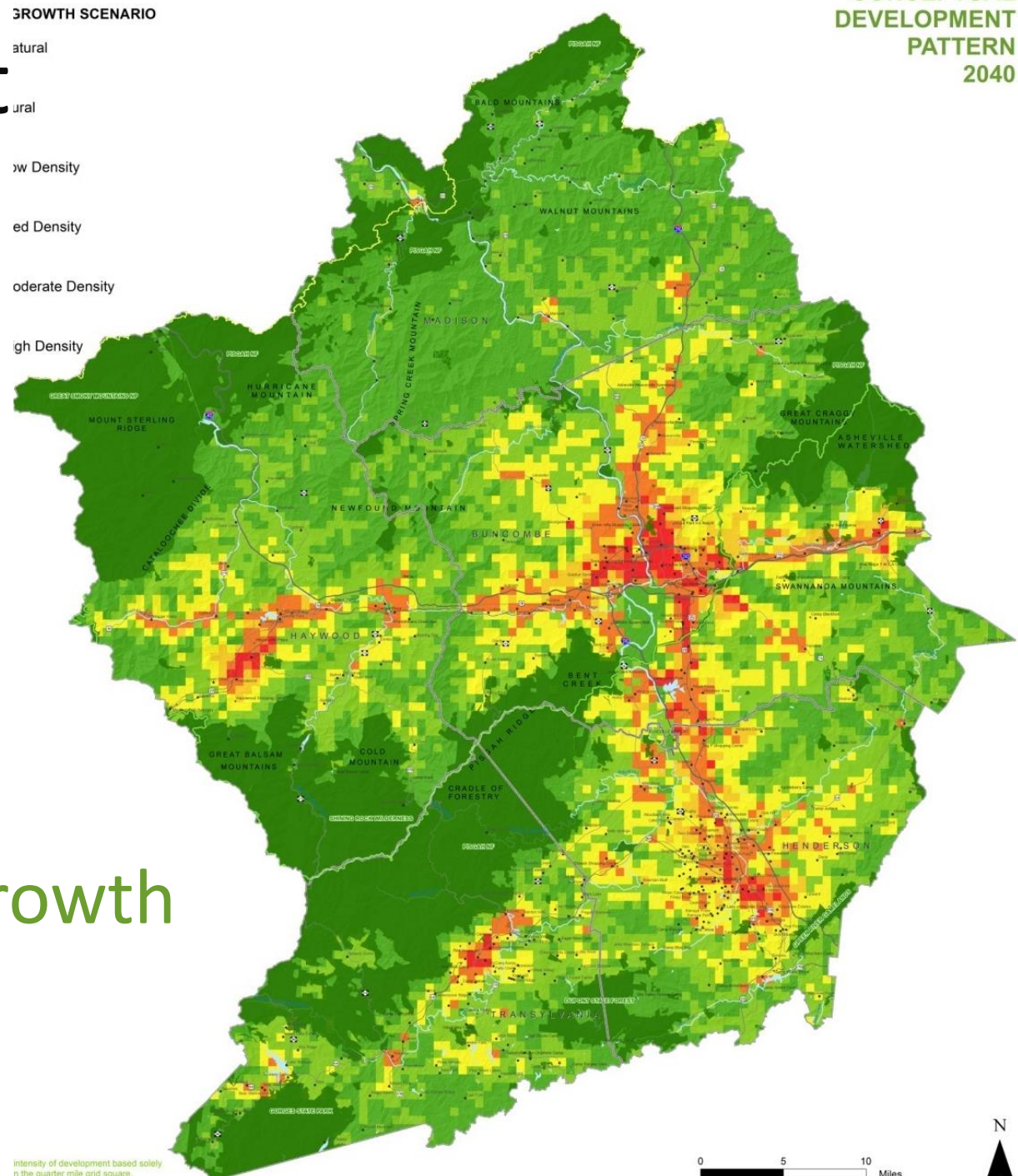
Resource  
Conservation

Intensity of development based solely on the quarter mile grid square.



# Development Pattern 2040

CONCEPTUAL  
DEVELOPMENT  
PATTERN  
2040



4

EG

Efficient Growth

Intensity of development based solely on the quarter mile grid square.

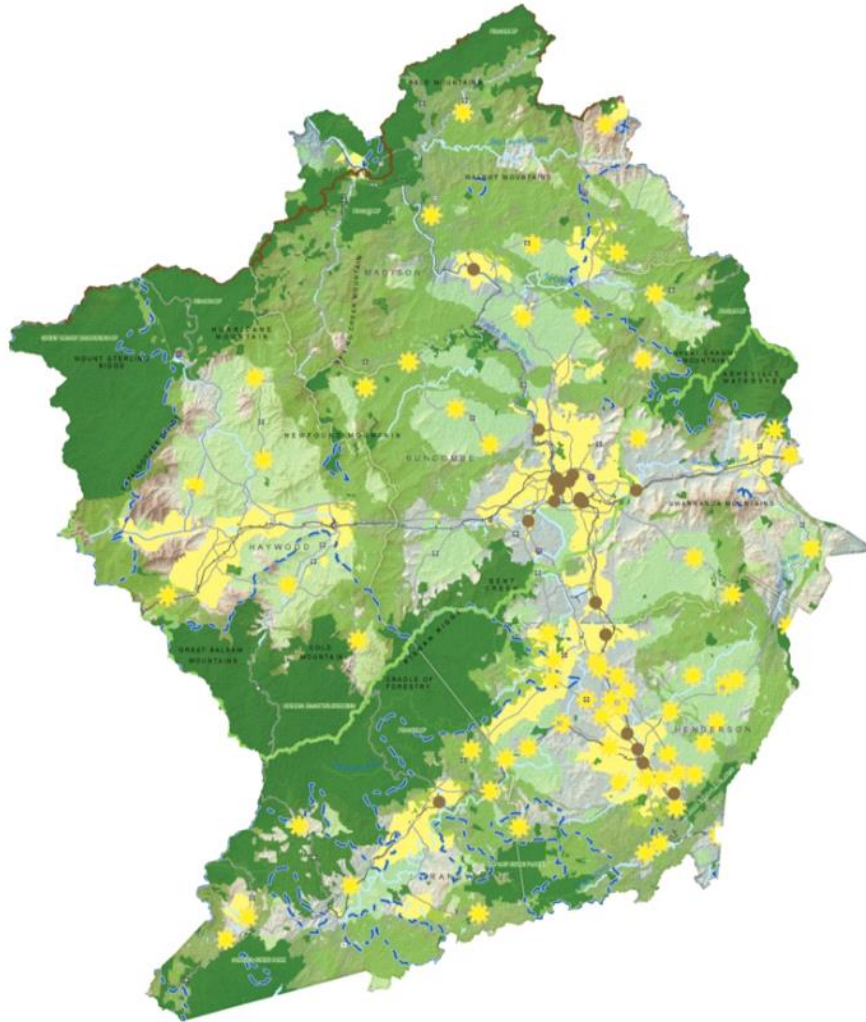


# Big Ideas / Themes

- **Grow where infrastructure exists**
- **Co-locate jobs, housing and services**
- **Diversify uses & mix densities**
- **Protect natural assets**



# Preferred Scenario



**CRITICAL WATERSHEDS**  
80% less impervious surface

Appalachian Trail  
Blue Ridge Parkway

**Brownfield Sites**  
*Redevelopment is encouraged on brownfields, old industrial sites and shopping centers.*

**Rural Centers**  
*Infrastructure investments in rural communities result in more housing and jobs.*

**PUBLIC CONSERVATION LANDS**

*Well-located industrial sites are reserved for job creating uses.*

*Land use policies encourage growth in areas that are not in conflict with natural or cultural resources.*

**KEY ECOLOGICAL CORRIDORS & HABITATS**  
70% more remain intact

**AGRICULTURE & FORESTRY LANDS**  
85,000 more acres preserved

**LAND USE**  
Policies focus growth in areas with existing infrastructure





Thank you!

[www.landofsky.org](http://www.landofsky.org)

Erica Anderson, AICP

Economic & Community Development Director

[erica@landofsky.org](mailto:erica@landofsky.org)

828.251.6622 x123

# Exploring Climate Threats



Jim Fox, UNC Asheville's NEMAC  
jfox@unca.edu

# Main Points

What is normal? (known past extremes)

What is changing or likely to change? (possible future extremes)

Will any climate threats have a big impact on things I care about?

*(Stormwater systems designed to handle 25-year storm, not all storms)*

Is Western North Carolina (my community) resilient to these threats?

# National Climate Assessment - Key Messages for WNC

## Increasing precipitation variability

- More exceptionally wet and dry summers
- Decreased water availability, exacerbated by population growth and land-use change

An **increase** in the frequency, intensity, and duration of **extreme heat events** and temperature variability is expected.

Increased length of growing seasons (but variability in last frost)

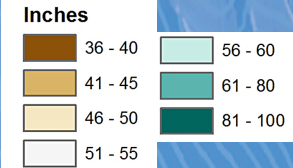
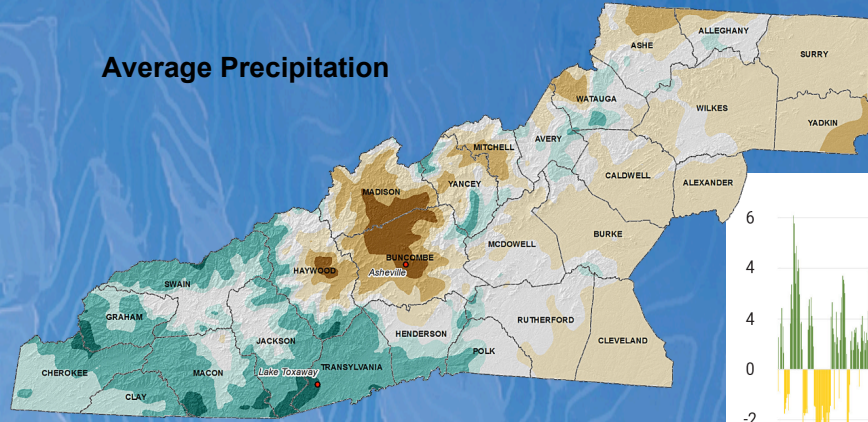


Changes in temperature, precipitation, energy, population, and other new realities are stressing our communities and livelihoods.

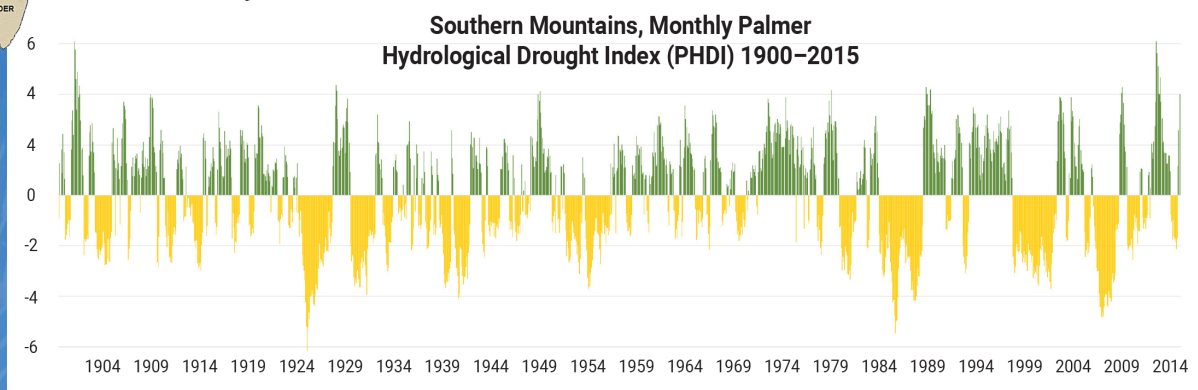


# Precipitation in Western North Carolina

## Average Precipitation



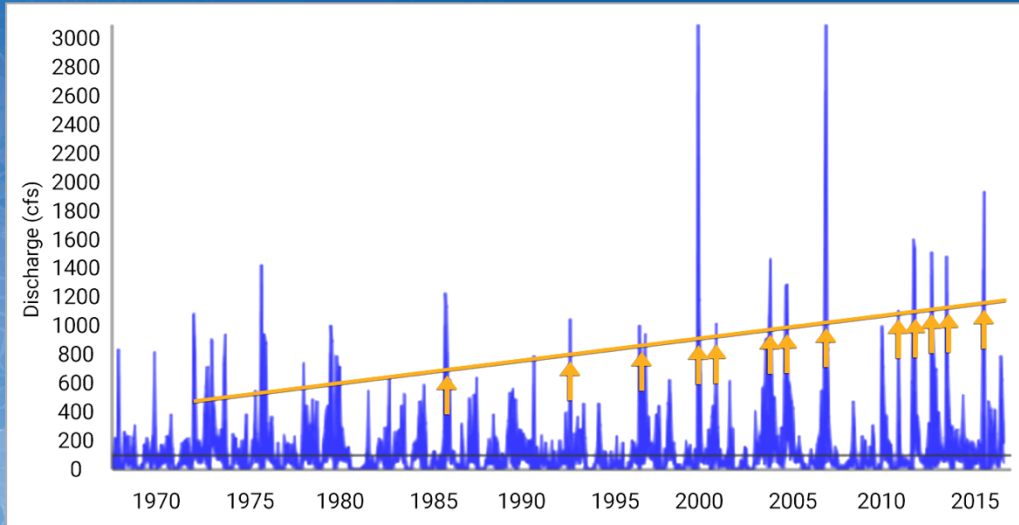
## Precipitation Variability, Drought, and Wet Conditions



*It is not just the average precipitation that matters – it is when we receive the rainfall (feast or famine).*

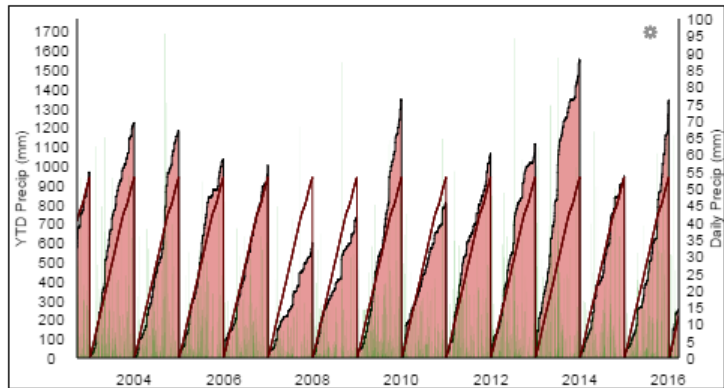


The **frequency** and **severity** of extreme weather events is increasing. This leads to increased risk to communities and companies.

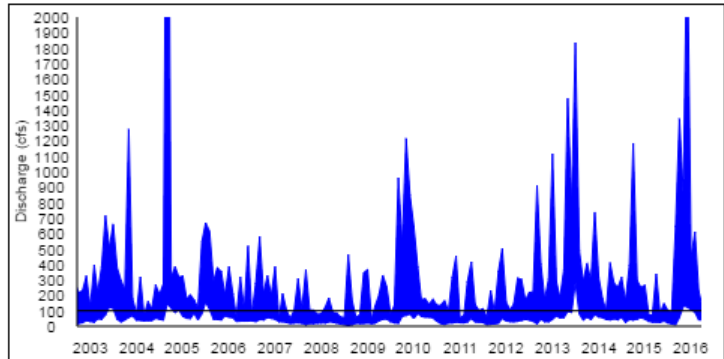




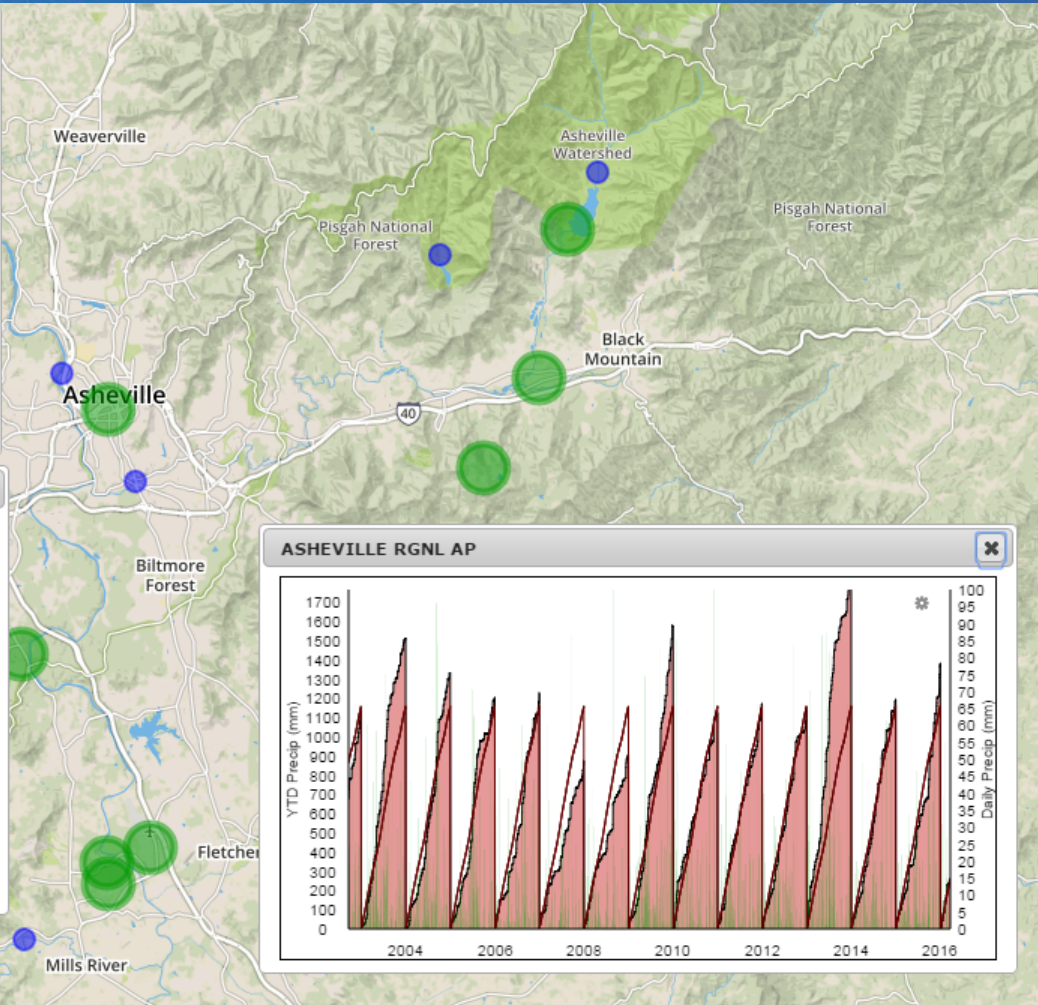
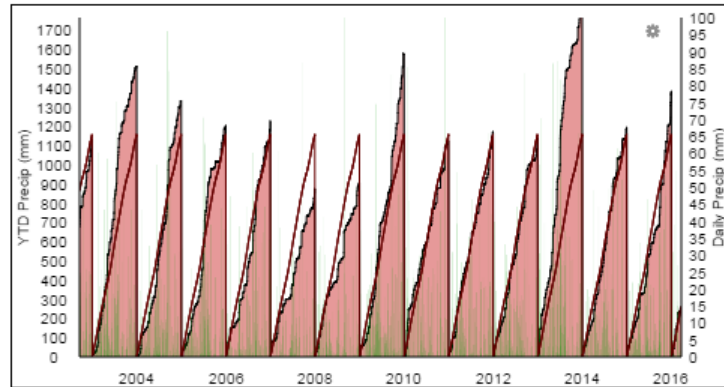
### ASHEVILLE

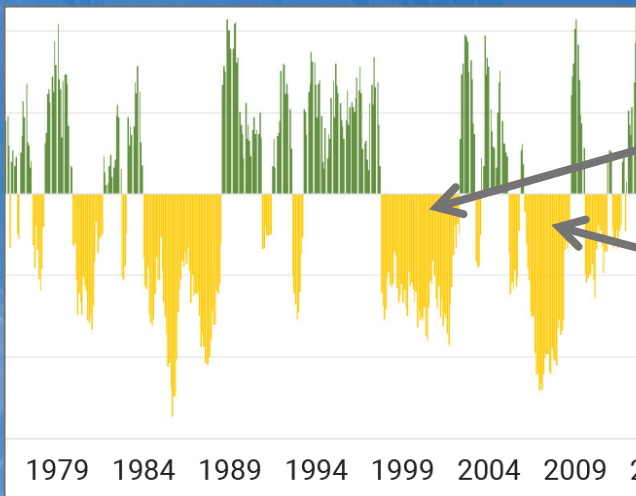
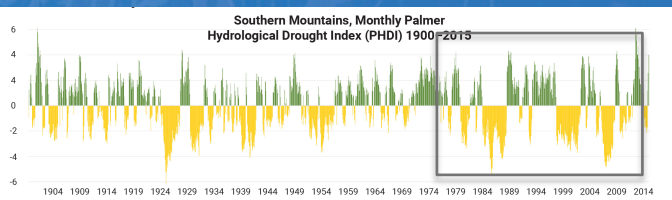


### SWANNAHOA RIVER AT BILTMORE, NC



### ASHEVILLE RGNL AP





# Water shortages during the droughts of 2002 and 2007

## 2002 drought

- Impact to water services
- Impacted 200 municipalities

## 2007 drought

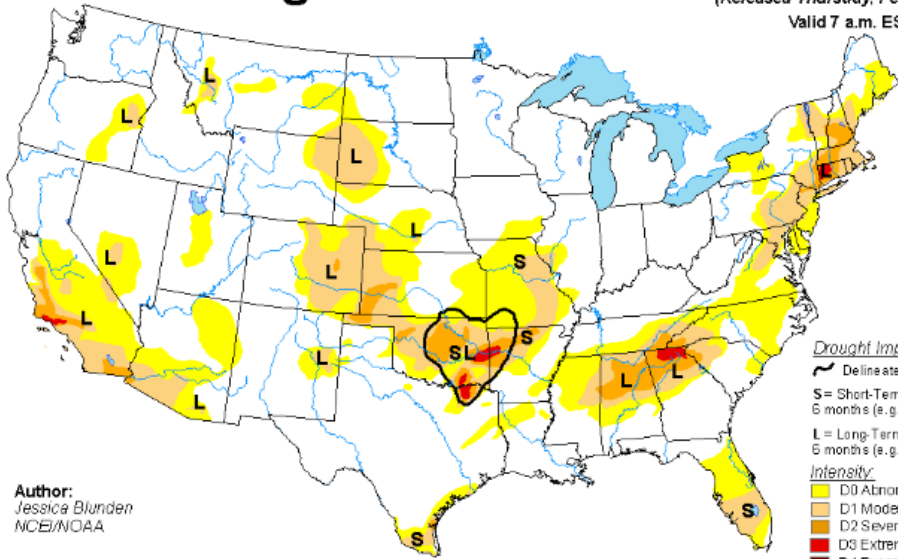
- Worst on record since 1895
- 7,200 wildfires
- The two droughts led several towns to initiate projects to ensure adequate future water supply



# 2016/2017 Drought – Just Starting?

## U.S. Drought Monitor

February 14, 2017  
(Released Thursday, Feb. 16, 2017)  
Valid 7 a.m. EST



Author:  
Jessica Blunden  
NCEI/NOAA

### Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

### Intensity:

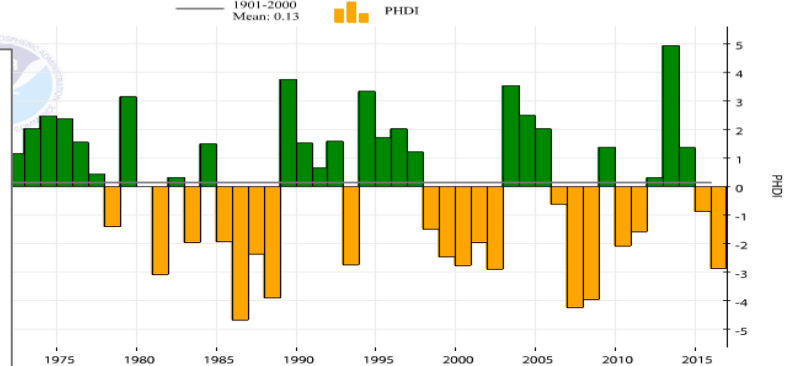
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

### North Carolina, Climate Division 1, PHDI, August-October



Linking detailed climate data with local socioeconomic data offers solutions for risk reduction, yielding large cost/benefit returns.

This allows moving from just exposure (hazard mitigation) to resilience.



# Questions?

# UNC Asheville's NEMAC

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Helping people understand—and reach decisions in—a complex and changing world