

# **Polluted Parks**

## **How Dirty Air is Harming America's National Parks**



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As the National Park Service approaches its 100th anniversary, time is running out for President Obama to fulfill our country's promise to clean the air in our national parks.



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# I

## Executive Summary



## I. Executive Summary

National parks *should* have clean air. But do they?

To answer that question, this report analyzes the state of the air in America's national parks. It finds that—despite significant progress—air quality in national parks is still far from pollution-free. Air pollution has found its way to the highest peaks and most remote corners of the National Park System, from Everglades and Acadia to Joshua Tree and Denali. Our parks are at a crossroads. Now President Obama must make a critical choice about the future: In the decade ahead will the parks be heading towards clean or polluted air?

Spreading out over hundreds and thousands of miles, pollution seeps into our national parks from sources like coal-fired power plants, vehicles, and the oil and gas industries. The signs and symptoms show up in many ways: unhealthy air, hazy skies, changes in the temperature or precipitation. Looking at these three main areas—health, haze, and climate—this analysis identified pollution-related damage in every one of the 48 national parks that the Clean Air Act is supposed to best protect—places like Yosemite, Acadia, and Great Smoky Mountains.

Seventy-five percent of these iconic parks have air quality that's unhealthy at times. Haze pollution limits how far you can see at 100 percent of the parks. And 90 percent are already experiencing a changing climate—weather that's more extreme than it has been at any other time in the last century. The dozen most impacted parks were so dirty, they earned grades of "D" or worse in at least one category. Without action, the situation is unlikely to change soon—under current plans, some parks aren't predicted to have clean air for centuries.

To get national parks on the path to clean air, President Obama should make some common sense revisions to the main rule designed to protect the parks from air pollution. Known as the Regional Haze Rule, it's been critical to improving park air—but loopholes limit how effective the rule will be going forward. To be successful, we need park-centered clean air plans that require polluters to do their share for America's national parks.

National parks *should* have clean air. But will they? By making these changes before he leaves office, President Obama can make sure the answer is yes.

### What Is the Regional Haze Rule?

The Regional Haze Rule is the blueprint for reducing—and eventually eliminating—human-caused air pollution in some of America's biggest and wildest spaces. It protects 48 national parks, along with 108 wilderness areas managed by the Forest Service and the Fish and Wildlife Service. Once a decade, states must revise plans to lower air pollution in these places, aiming for air free from pollution by 2064. Unfortunately, like a half-drawn blueprint, the rule isn't clear about what state plans need to include—a weakness that has many protected places decades or centuries off track.

### Which National Parks Are Best Protected From Air Pollution?



The report uses the terms "parks" and "national parks" to refer to the 48 National Park System sites that have special protections for air quality. These expansive, often remote parks are supposed to have the cleanest and best air quality in the park system, and yet they still suffer from air pollution. Although the analysis is limited to this group, air pollution impairs nearly every one of the more than 400 units in the National Park System.

A desert landscape at sunset. The sun is low on the horizon, creating a bright orange and yellow glow. Silhouetted mountains are visible in the background, and several Joshua trees are scattered across the foreground. The overall scene is warm and atmospheric.

# II

## Introduction

## II. Introduction

We've got a blind spot about air pollution in national parks. When we go to parks the air often feels cleaner and fresher; the blue sky can stretch for miles. So understandably it is hard to see that the air in the parks—all parks—is affected by human activities. Coming from sources like coal-fired power plants, vehicles, and the oil and gas industries, pollution doesn't stop at park borders. The symptoms of air pollution are there, if you know where to look.

It can be tempting to ignore air pollution because it seems overwhelming. Air pollution starts with everyday experiences like driving a car, using electricity, and heating or cooling our homes. And it has no regard for maps, easily crossing the boundaries of parks, states, and countries.

Experience tells us that these challenges can be overcome. Thanks to the Clean Air Act and steps the Environmental Protection Agency has already taken, tremendous progress has been made toward better air quality in parks and nationwide. But the job is not complete. So where does this leave our national parks?

This report answers four basic questions about air quality in national parks:

1. **Is the air healthy to breathe?**
2. **Does pollution make it hard to see?**
3. **Is the park experiencing the effects of climate change?**
4. **What can we do to bring clean air to the parks?**

The answers to these important questions come from recent data and research completed in each area. The report grades and ranks the 12 parks most negatively affected by air pollution. Sections on each

topic—Healthy Air, Seeing Clearly, and Changing Climates—explore general trends across all parks. These are followed by recommendations for action.



A scientist gathers data from an air quality monitor at Yosemite National Park.  
©University of California at Davis

“As a real estate broker I clearly see the importance of having clean air in our community and Joshua Tree National Park. What’s clear to me and to nearly 2 million park visitors each year is that we all want Joshua Tree to have pristine views, wildlife and healthy Joshua tree forests—all of which are threatened by air pollution. I can say with complete certainty that most people looking to purchase property in this area are compelled and driven by those very resource amenities—scenic vistas, animals and plants—and will pay more for them. The bottom line is that having healthy, clean air is good for people, the desert ecosystem, and maintaining a vibrant economy.”

— Peter Spurr, real estate broker and Joshua Tree National Park advocate

# III

## Key Findings



### III. Key Findings

Pollutants from a common set of sources cause health, haze, and climate problems. Main culprits in each case include coal-fired power plants, vehicles, and industries that produce and use oil and gas. The key findings of this report shows the extent of that air pollution's impact on our national parks.

- Air pollution is widespread and affects all national parks—even those that don't appear to be polluted.
- The 12 parks most harmed by air pollution all have air that is unhealthy at times and are regularly blanketed by haze pollution, earning grades of “D” or worse in at least one category.
- Seventy-five percent of our most iconic parks have air quality that's periodically unhealthy, with 36 out of 48 parks having at least “moderate” ozone levels at times, meaning that pollution makes the air unhealthy to breathe for some populations.
- Four parks—Joshua Tree, Sequoia, Kings Canyon, and Yosemite National Parks —regularly have air that's known to be unhealthy for most park visitors and rangers. In some cases, the parks have unsafe air for more than a month each year, usually during the summer.
- Haze pollution cuts down on how far you can see at all parks. On average, visitors miss out on 50 miles of scenery—a distance equivalent to the length of Rhode Island.

- Ninety percent of our national parks are currently experiencing extreme weather that scientists link to climate-changing air pollution: They are hotter, wetter, or drier than they were for most of the past century.

- Progress towards clean air could be stalled for decades unless some common sense revisions are made to the Regional Haze Rule that protects parks from air pollution.



## Top 12 Parks Most Harmed By Air Pollution: Report Card

RANK	PARK (STATE)	HEALTHY AIR	SEEING CLEARLY	CHANGING CLIMATES <sup>2</sup>
1 <sup>1</sup>	Sequoia National Park (CA)	F	D	D
1	Kings Canyon National Park (CA)	F	D	D
3	Everglades National Park (FL)	B	D	F
4	Joshua Tree National Park (CA)	F	C	F
5	Carlsbad Caverns National Park (NM)	C	D	F
6	Acadia National Park (ME)	B	C	F
7	Yosemite National Park (CA)	F	C	F
8	Guadalupe Mountains National Park (TX)	C	D	D
9	Big Bend National Park (TX)	C	D	D
10	Mammoth Cave National Park (KY)	D	F	B
11	Great Smoky Mountains National Park (TN/NC)	D	D	C
12	Saguaro National Park (AZ)	C	D	C

1. Sequoia and Kings Canyon National Parks are tied for “most harmed park.” Because they are so close together, they are often measured by the same air quality monitor, so their ratings are the same.
2. In recognition of the current and increasing impacts of climate change to all national parks, no parks received higher than a “B” grade in this report.



“Climate change is visible at national parks across the country...[we need] to help protect some of America’s most iconic places—from the Statue of Liberty to Golden Gate and from the Redwoods to Cape Hatteras—that are at risk from climate change.”

— Secretary of the Interior Sally Jewell

# IV

## **Clouding Decades of Progress Toward Clean Park Air**



## IV. Clouding Decades of Progress Toward Clean Park Air

The widespread air pollution documented in this report is the starting point for two different—but equally true—stories. Look backwards, and you’ll see the resounding success of the Clean Air Act so far. Today there is less pollution, clearer skies, and healthier air in our national parks than at any other point in the four decades since the Clean Air Act was enacted.

On the other hand, if you look ahead, you’ll see an uncertain future. Current air quality conditions are far from pollution-free. And science now shows that lower levels and different kinds of pollutants can add up to big problems. Experience tells us that our existing regulations lower pollution but still leave gaps through which plenty of pollution escapes.

We can do better. Proven technologies would let us limit pollution in more effective ways—if they were used consistently. We know how to use energy more efficiently and how to produce it with well-placed solar, wind, and other renewable energy sources. There are solutions, but we need to apply them.

As a part of the Clean Air Act, our nation set a goal decades ago to have clean, natural air in our national parks. But we won’t get there by chance. The rules and plans that protect the parks must be revised to include a clear roadmap for how to get to the goal.

### Naturally Pollution-Free

“Natural” means air that is free from pollution caused directly or indirectly by human activities. In many cases, that’s easy: coal-fired power plants and vehicles are obviously human creations. In other cases, like fire and dust storms, that’s more complicated: these sources are both natural and influenced by human activity. They need to be treated with a consistent, science-based approach.



### Where Does Pollution Come From?

Air pollution is the combination of many sources, big and small. There are large industrial contributors like power plants and sources like cars and trucks that are individually small but collectively big. Producing and burning oil and gas, heating and cooling buildings, industrial processes, and agriculture play a part as well.

These sources release pollutants that cause health, climate, and haze problems either directly—in the form they’re emitted—or indirectly, after reacting chemically in the atmosphere.

Emissions that are closer to parks usually have the most impact. But because air pollution can travel thousands of miles, distant sources can play a part as well. For that reason, limiting pollution where we can is critical.



**V**

**Healthy Air**



## V. Healthy Air

Parks are associated with health—and rightly so. Spending time outdoors can provide a documented boost to your well-being. Programs like “[Let’s Move Outside](#)” were developed because of research showing that regular exercise in natural settings improves children’s physical and mental health. Some doctors even “prescribe” park visits. And yet national parks are not always healthy places to be.

Ozone pollution, or smog, is common throughout the country, including at national parks. Ozone isn’t visible, but it can be dangerous—sometimes deadly. Even short-term exposure, like a hike in the park, can make asthma and breathing problems worse. Ozone pollution also increases the risk of heart attacks, strokes, and other heart conditions. It’s a hazard for anyone, but the specific risks vary with age, health, and activity level.

Of the 48 parks studied, 36 at times experienced “moderate” or worse ozone pollution according to the Air Quality Index developed by the Environmental Protection Agency. While “moderate” might not sound so bad, these levels of air pollution are risky for especially sensitive populations—such as a kid (whose lungs are still developing) who has asthma (like roughly one out of every ten kids in the United States) and is playing outside (like most kids in national parks!). But “moderate” ozone levels are linked to health effects in the wider population too.

Even more troubling, four parks—Joshua Tree, Sequoia, Kings Canyon, and Yosemite National Parks—regularly had ozone levels that are known to be unhealthy for most park visitors.

### How Do I Know If Park Air is Healthy?

It’s important for park visitors to know that when the forecast is “unhealthy for sensitive groups,” anyone who is active outdoors is considered part of a sensitive group, regardless of their age or health. Children and teenagers, older people, and those with heart or lung conditions are particularly at risk.

If you want to check the air quality before heading out to a park, [Airnow.gov](#) provides forecasts for conditions throughout the country. Some national parks are listed directly, but in other cases you may need to search for nearby zip codes. The National Park Service also reports current conditions for specific parks [on its website](#).

### #Ozone

A few parks, including Rocky Mountain, Sequoia, and Kings Canyon National Parks, send out [advisories on social media](#) alerting the public to air quality conditions.

Sequoia Kings Air  
@SequoiaKingsAir

ADVISORY: #ozone is expected to be Unhealthy for Sensitive Groups in and around Sequoia & Kings Canyon NPs today [flic.kr/p/cMo7Q7](http://flic.kr/p/cMo7Q7)

•• Flickr

Ozone Air Quality Guide

Advisory Level	Health Concern
Unhealthy for Sensitive Groups (76 ppb -95 ppb)	The following groups should limit prolonged outdoor exertion: <ul style="list-style-type: none"><li>• People with lung disease, such as asthma</li><li>• Children and older adults</li><li>• People who are active outdoors</li></ul>

The ozone advisory level is based on an 8 hour average ozone concentration: ppb = parts per billion.

O3\_AdvisoryLevel\_UFSG

View on web

RETWEET 1

8:46 AM - 16 Jun 2015

NPS Air  
@NPSAir

Air pollution travels to parks. Even some "natural" parks have air quality conditions more typical of cities! #AirQualityChat

RETWEETS 11 FAVORITES 4

10:24 AM - 30 Apr 2015

NPS Air  
@NPSAir

You may want to hold off your biggest hike of the year on a poor air quality day. Parks have many options. #AirQualityChat

10:31 AM - 30 Apr 2015

## Other Health Hazards

Ozone is not the only unhealthy air pollutant present in the parks. Nitrogen oxides (a main ingredient in ozone) and sulfur oxides each pose a double threat. These common pollutants can cause breathing problems directly—and they also react with other gases to form tiny particles in the air. These particles—known as particulate matter—contribute to heart and lung problems, and play a key role in haze pollution.

Toxic chemicals like mercury and pesticides are widespread too. These persistent airborne pollutants continue to do damage long after they're released. Researchers still find contaminants that were used decades ago even in the most remote parks like Denali National Park in Alaska.

And it's not just humans that are hurt by air pollution. Plants and wildlife in the parks also struggle with the effects; since they can't go indoors, they're constantly exposed. Ozone burns the leaves of plants, leaving dark spots and stunting growth. At Great Smoky Mountains National Park, for instance, more than 30 species of plants show signs of damage—including 90 percent of black cherry trees.

“The San Joaquin Valley has some of the poorest air quality in the nation, with one in six children afflicted with asthma. This not only affects the health of Valley residents, but also affects the ecosystems within the Sequoia & Kings Canyon National Parks by causing damage to the native plants, animals, and natural vistas. Damage to our climate impacts all life, from our national parks to our local communities.”

— **Destiny Rodriguez, Director of Outreach and Communications at Central California Asthma Collaborative**



### RISKY BUSINESS

Job-seekers looking to work at Sequoia and Kings Canyon National Parks will have to consider the health risks—even indoor jobs come with a warning that these parks “have poor air quality” at times and “may pose human health problems due to air pollution.” The parks’ air is unhealthy for roughly two months every year—mainly in the summer months.

The logo consists of the Roman numeral 'VI' in a bold, grey, sans-serif font. It is positioned on a light grey rectangular background. To the left of this background is a vertical green bar.

**Seeing Clearly**



## VI. Seeing Clearly

National parks offer some of the most breathtaking sights in the country. But what good are stunning views if you can't see them, or if they're covered in brown haze?

Haze pollution is made of particles and gases that block the light needed to see things in the distance. Together, they create a haze that makes scenery look dull and can make mountains that are farther away disappear completely from view.

When you see a thick cloud of smog over a city or can't make out a mountain that's usually there, haze pollution might come to mind. Most often, though, it just seems like that's how things look. With haze, it can be hard to know what you're missing—or even that you're missing anything at all.

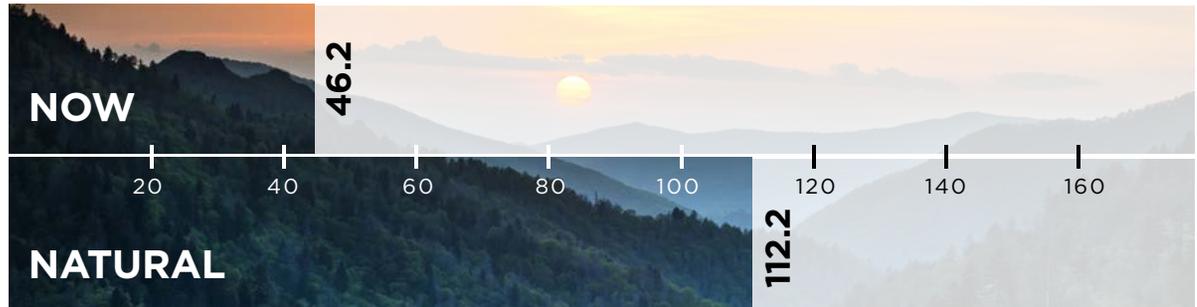
What's typically lost in the parks is about 40 percent of the view. At two parks—Mammoth Cave in Kentucky and Saguaro in Arizona—a natural view is almost impossible to come by, even on the clearest days. On average, more than 70 miles of the view is missing at these parks.

### How Long Will It Take?

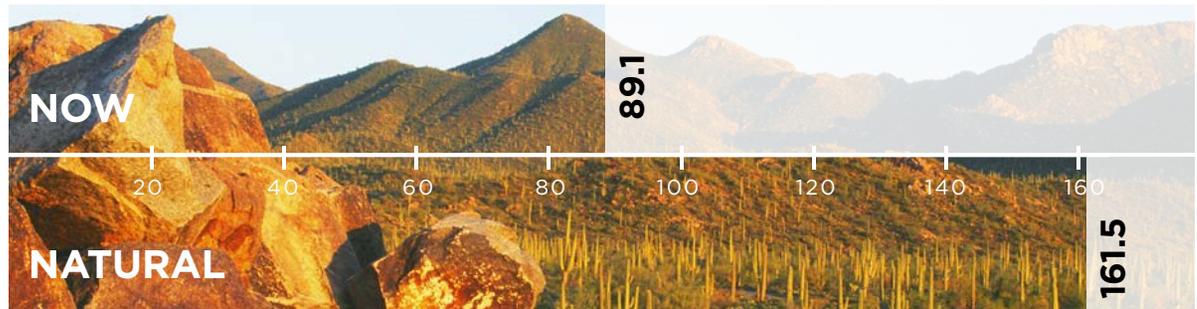
At the currently required pace of pollution reduction, clean air in national parks might take hundreds of years. For instance, the Environmental Protection Agency recently estimated that natural air quality could be 130 years in the future for Guadalupe Mountains National Park in Texas.

### Visibility in Miles

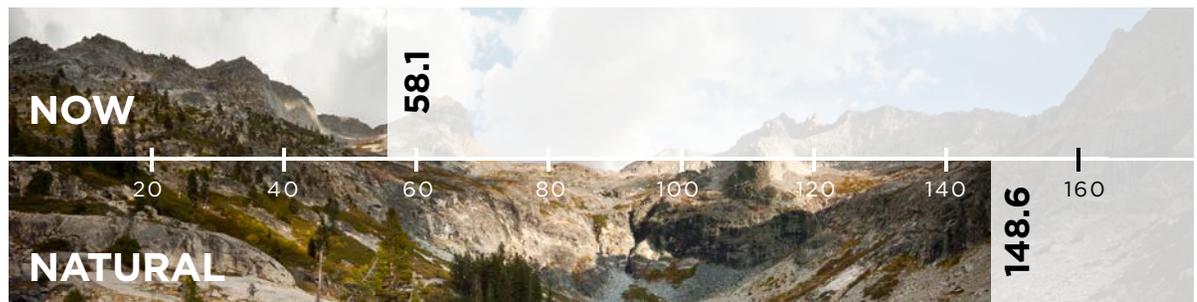
#### Great Smoky Mountains National Park

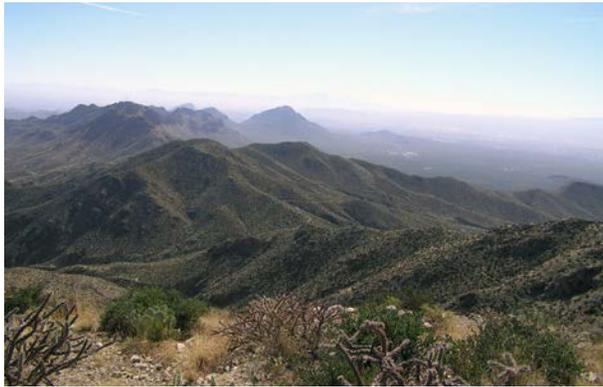


#### Saguaro National Park



#### Sequoia and Kings Canyon National Park





“The visibility at times is atrocious. When I ride my bike in the higher elevations, I can look out and see the brown layer of pollution that is settled over the city. Funny as it sounds, Saguaro National Park actually reminds you of the poor air quality in the Tucson Basin and you can’t help but think of health implications while scanning the viewpoints.”

— Luther Propst, founder and former executive director of the Sonoran Institute

### A Work In Progress: Great Smoky Mountains National Park



1990



2010



NATURAL

**Great Smoky Mountains National Park is, well, smoky. The term refers to the bluish mist that naturally hangs over the mountains, rather than the white or yellowish haze pollution that is commonly seen at the park. It’s the fate of this human-caused haze that makes the Great Smoky Mountains a symbol of both the successes of the Clean Air Act and the continued need for progress.**

As of the early 1990s, average visibility in the Smokies was just 25 miles. In the last decade, reduced pollution in the surrounding area—most notably from closing or retrofitting Tennessee Valley

Authority power plants—improved air quality considerably. As a result, visitors admiring the view can now see 46 miles away. That’s a significant change, but it’s still less than half what it should be.

Without pollution, vistas would stretch out for roughly 112 miles through the rolling southern Appalachian Mountains.

# VII

## Changing Climates



## VII. Changing Climates

National parks are extraordinary and wonderful in ways that we want to preserve for our kids and their kids to experience. But that mission is fundamentally threatened by climate-altering pollution.

Climate pollution—coming from the same sources as health and haze pollution—is changing the atmosphere, and with it, the weather. Climbing temperatures, sea level rise, and intensified storms are all associated with human-caused climate change.

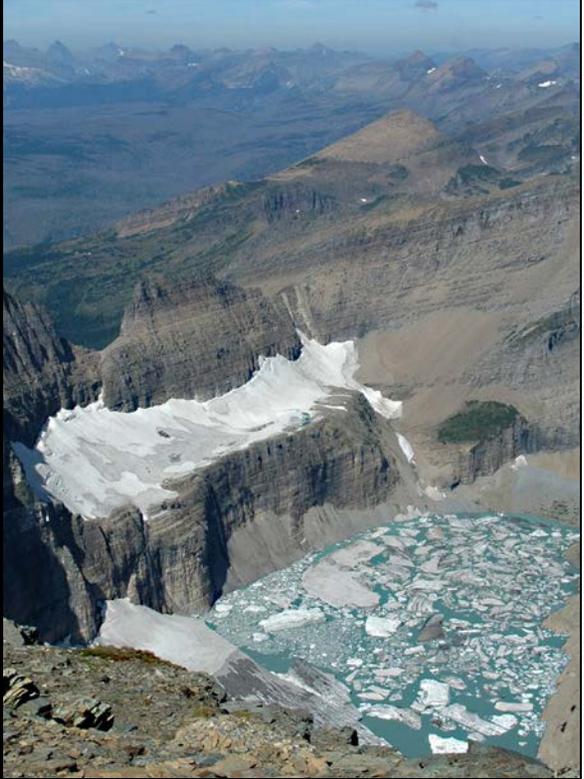
Because the weather can vary significantly from year to year, climate trends are best analyzed over longer periods of time. To study climate change, researchers with the National Park Service reviewed weather records dating back to 1901, and compared historic conditions to the most recent 10-, 20-, and 30-year periods.

What they found is unsettling. Virtually all parks are already undergoing some degree of warming. Most—more than 80 percent—are currently facing temperatures that are extremely hot relative to the last 112 years. And more than 30 percent are already at peak temperature: If they grow any hotter, they'll be in uncharted territory, exceeding anything in the historic record.

### Presidential Attention

As noted by President Obama in April 2015, Everglades National Park is another park where the current effects of a changing climate can be seen. Exceptionally high temperatures and increased rainfall are not the only problems; in addition, sea-level rise is altering the delicate balance of salt and fresh water in the park—and threatening the region's drinking water.

**1938****2009**





**AT RISK: PARK NAMESAKES**

Changing climates pose a threat to the fundamental character of national parks. Glacier's glaciers, for instance, are rapidly melting and are expected to disappear altogether within a few decades.

## Changing Climates From Coast to Coast

Although most parks show signs of warming, changes in precipitation are more variable. Some parks—like Acadia National Park in Maine—have been experiencing extreme wet conditions. This oceanside park, which sees some 2.6 million visitors each year, is now wetter and warmer than almost any other time in the last century. The extreme weather is wearing away at Acadia’s famous granite bedrock, quite literally: The added rainfall has increased washouts of roads and trails. The new conditions are chasing off native plants and wildlife, including Maine’s state bird, the black-capped chickadee. Meanwhile, new species have made themselves more at home; deer ticks, which carry Lyme disease, have experienced a notable boom.

At the other end of the country is Joshua Tree National Park, which is increasingly hot and dry. At this desert park, which welcomes roughly 1.6 million visitors each year, annual temperatures are hotter than any point in the past century; precipitation during the wettest month of the year is at a historic low. The extreme weather is causing a shift in the habitat for the park’s iconic Joshua trees. In the hottest and driest areas of the park, older trees are dying and few young trees are replacing them. Some estimates have concluded that 90 percent of the park’s Joshua trees will disappear by the end of the century.



“Changes in Acadia are at the extreme end. Our forests, coastlines, wildlife, and iconic views are already very different than they were when the park was created 100 years ago, and will change even more in coming years.”

— **Abe Miller-Rushing,**  
**science coordinator at Acadia**



Volunteers check a lizard trap as part of a study documenting the impacts of climate change at Joshua Tree National Park.

©NPS | Kurt Moses

## Parks Do Their Part

The National Park Service and the United States Geological Survey concluded that national parks in the continental United States play an important role in limiting climate pollution. They absorb emissions equivalent to 3.1 million passenger cars each year, a service valued at more than \$580 million. To reduce pollution by the same amount, you’d have to remove all the cars from Oregon, Kansas, and West Virginia—combined!

# VIII

## **Recommendations: Clean Air for the National Parks' Second Century**



## VIII. Recommendations: Clean Air for the National Parks' Second Century

Once you're aware of the symptoms of air pollution in our parks, you can't ignore them. The overwhelming evidence reveals air that is cleaner but not yet clean. Park air is still dominated by pollution from power plants, vehicles, and other activities that produce and burn coal, oil, or gas.

Although there are many laws and rules that aim to reduce this pollution, only one specifically protects air quality in our parks: the Regional Haze Rule. It fulfills a promise made by Congress nearly 40 years ago that our iconic national parks should have the cleanest air. And it sets a reasonable, achievable goal of pollution-free air by 2064, roughly half a century away. To get there, states are supposed to map out pollution reductions every ten years.



But flaws in the Regional Haze Rule make it unlikely that the current approach will work. The rule doesn't clearly lay out what pollution reduction options states need to consider or how they need to be weighed. So states can claim that reducing pollution is just too challenging while ignoring commonsense opportunities for progress. Flexibilities in the rule allow kicking deadlines down the road for generations to come.

North Dakota, for instance, has declined to consider available technology to reduce emissions from oil and gas development in its western Bakken region, preferring to blame Canadian pollution sources. Nebraska opted to allow its biggest polluter, the Gerald Gentleman power plant, to continue operating without basic emission controls, despite a clear demonstration of damage to Badlands and Wind Cave National Parks. These parks aren't expected to have clean air for more than two centuries.

In 2016, the National Park Service enters its second century of existence. Major celebrations are planned around the country. But we need more than birthday

candles to honor our parks. The President can take steps that will clean the air in our parks while providing healthier air for millions of Americans and reduce the risks of climate change. To solve the air pollution problems at our national parks, the Obama Administration needs to improve the Regional Haze Rule. Before he leaves office, the President should revise the rule to:

- **Set Park-Centered Targets.** Most parks need an individual clean air plan that identifies where pollution is coming from and how much it has to be limited to get to natural air quality. That information should determine pollution reduction requirements starting with targets for the next decade.
- **Close Loopholes.** Gray areas in the existing rule let some polluters avoid doing their part. To be effective, the Regional Haze Rule has to eliminate free passes for polluters.
- **Strengthen Accountability.** Each state needs to do its share to clean up all the parks affected by its pollution—not just parks within its borders. Any source of pollution that is part of the problem needs to be part of the solution too.
- **Give Park Managers a Voice.** The National Park Service knows its parks better than anyone. They need a strong role in the process of setting and advancing clean air plans.

By making these changes, President Obama can put our national parks on the path to clean air within the next decade. With the Centennial Anniversary of the National Park Service in 2016, now is the time to look ahead. The parks may be tainted by air pollution today, but if the President takes action now, he can make sure that their future—and our own—is healthy, bright, and clear.

# IX

## Methods



## IX. Methods

This analysis relies on dependable data about park conditions. The data sources for each category are discussed below.

### Healthy Air

The National Park Service compiles information about the levels of ozone—also known as smog—in the parks. This report compares concentrations of this invisible, dangerous pollutant from 2008–2012 to healthy values from the Environmental Protection Agency’s [Air Quality Index](#). Although ozone is not the only pollutant that threatens human health in the parks, it is one of the most widespread.

### Seeing Clearly

Visible pollution, or haze, consists of tiny particles and gases in the air that make it harder to see things in the distance, like mountains or mesas. It robs them of color and detail. Visibility in national parks is monitored by an interagency group that includes the National Park Service, the Forest Service, and the Fish and Wildlife Service. Using [this group’s data](#), the analysis evaluates the how far you can see in national parks without haze pollution versus actual air quality conditions in 2009–2013.

### Changing Climates

Climate change linked to human activity is caused by air pollution that traps heat in Earth’s atmosphere. Temperature and precipitation are perhaps the most apparent and easily measured indicators of changing climates. This report summarizes [data developed by the National Park Service](#) about temperature and precipitation in national parks in the last century as compared to recent decades.

Grades were assigned based on the range of measurements within each category. The three categories were then combined into an overall rank that reflects the degree of harm from air pollution in each park. The categories were given equal weight, so that each one counts for one-third of the overall rank.

These rankings use recent data to represent current

conditions. The damage described is not theoretical. It’s happening right now, in every park. At the same time, scientific predictions of likely future conditions are also valuable. They give critical information about what will happen if things stay on the same track they’re on now. The report highlights potential outcomes to demonstrate both the need and the opportunity to create a better future for the parks.



## National Parks Air Pollution Report Card

RANK	PARK (STATE)	HEALTHY AIR	SEEING CLEARLY	CHANGING CLIMATES <sup>2</sup>
1 <sup>1</sup>	Sequoia National Park (CA)	F	D	D
1	Kings Canyon National Park (CA)	F	D	D
3	Everglades National Park (FL)	B	D	F
4	Joshua Tree National Park (CA)	F	C	F
5	Carlsbad Caverns National Park (NM)	C	D	F
6	Acadia National Park (ME)	B	C	F
7	Yosemite National Park (CA)	F	C	F
8	Guadalupe Mountains National Park (TX)	C	D	D
9	Big Bend National Park (TX)	C	D	D
10	Mammoth Cave National Park (KY)	D	F	B
11	Great Smoky Mountains National Park (TN/NC)	D	D	C
12	Saguaro National Park (AZ)	C	D	C
13	Petrified Forest National Park (AZ)	C	C	D
14	Pinnacles National Monument (CA)	C	D	C
15	Bandelier National Monument (NM)	C	C	D
16	Zion National Park (UT)	D	C	D

*continued*

1. Sequoia and Kings Canyon National Parks are tied for “most harmed park.” Because they are so close together, they are often measured by the same air quality monitor, so their ratings are the same.
2. In recognition of the current and increasing impacts of climate change to all national parks, no parks received higher than a “B” grade in this report.





## National Parks Air Pollution Report Card

RANK	PARK (STATE)	HEALTHY AIR	SEEING CLEARLY	CHANGING CLIMATES <sup>2</sup>
17	Chiricahua National Monument (AZ)	C	C	D
18	Crater Lake National Park (OR)	B	B	F
19	Lava Beds National Monument (CA)	C	C	D
20	Grand Canyon National Park (AZ)	D	B	D
21	Capitol Reef National Park (UT)	D	B	D
22	Bryce Canyon National Park (UT)	D	B	D
23	Great Sand Dunes National Park & Preserve (CO)	D	C	C
24	Yellowstone National Park (WY/MT/ID)	C	C	D
25	Lassen Volcanic National Park (CA)	D	C	C
26	Glacier National Park (MT)	A	C	C
27	Shenandoah National Park (VA)	C	D	B
28	Rocky Mountain National Park (CO)	D	B	C
29	Canyonlands National Park (UT)	C	C	C
30	Arches National Park (UT)	C	C	C
31	Mesa Verde National Park (CO)	C	C	C
32	Black Canyon Of The Gunnison National Park (CO)	C	B	C
33	Theodore Roosevelt National Park (ND)	A	D	B

2. In recognition of the current and increasing impacts of climate change to all national parks, no parks received higher than a "B" grade in this report.

*continued*

## National Parks Air Pollution Report Card

RANK	PARK (STATE)	HEALTHY AIR	SEEING CLEARLY	CHANGING CLIMATES <sup>2</sup>
34	Isle Royale National Park (MI)	B	C	B
35	Mount Rainier National Park (WA)	A	C	B
36	Badlands National Park (SD)	A	C	B
37	Point Reyes National Seashore (CA)	A	C	B
38	Craters Of The Moon National Monument & Preserve (ID)	C	C	B
39	Voyageurs National Park (MN)	B	C	B
40	Olympic National Park (WA)	A	C	B
41	North Cascades National Park (WA)	A	B	B
42	Wind Cave National Park (SD)	B	C	B
43	Grand Teton National Park (WY)	C	C	B
44	Redwood National Park (CA)	A	B	B
45	Virgin Islands National Park	•	D	B
46	Haleakala National Park (HI)	•	•	D
47	Hawaii Volcanoes National Park (HI)	•	•	C
48	Denali National Park and Preserve (AK)	•	B	B



• Sufficient data was not available from these parks to assign a grade.

2. In recognition of the current and increasing impacts of climate change to all national parks, no parks received higher than a "B" grade in this report.



# Acknowledgements

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