# Appalachia United Outdoors

Goal and Criteria Matrix

## Introduction

Trust for Public Land's (TPL's) Appalachia United Outdoors program is an initiative that leverages outdoor recreation to boost economic development, public health, and community connection across Appalachia. TPL's geospatial team conducted a geographic information systems (GIS) analysis to use map-based data to identify communities that may benefit from investment in the outdoor recreation economy. The goals identified through the technical advisory committee engagement were: Outdoor Risks and Resources, which address risk of losing natural resources due to flooding and wildfire risk; Economic and Community Need (ECN), addressing issues related to community health and poverty; Recreation Need and Access, measuring how many boating, hiking, camping, birding, and hunting opportunities exist within a 30-minute drive; the Outdoor Recreation Economy, measuring where outdoor recreation businesses, sales, and employment can grow; and Federal Funding Program Potential, identifying areas with resources that may be conserved using federal programs such as the Land and Water Conservation Fund and the USFS Community Forest Program.

The analysis covers 4,147 municipalities (Census Places plus select Pennsylvania townships) across portions of New York, Pennsylvania, Ohio, West Virginia, Maryland, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, and Mississippi. Each municipality is classified on a 1-to-10 scale across the five goal categories, where 10 represents the highest potential for growth of the outdoor recreation economy.

This document describes each variable used in the analysis: what it measures, why it matters for the AUO program, where the data comes from, and how it was processed and classified.

## Classification Methodology

Most variables are assigned a value of 1 to 10. For risk variables (flooding, wildfire, heat), higher risk produces a higher value because those communities face greater need. For recreation access variables, more nearby recreation opportunities produce a higher value, indicating greater potential for development and investment.

Combined values for each goal category sum the individual variable classes and reclassify the total into a 1-to-10 scale using Jenks natural breaks. Urban and rural municipalities are classified separately for Recreation Need and Access and Federal Funding Program Potential.

For Pennsylvania and Kentucky, CDC PLACES health measures (used in ECN_01 and ECN_03) are drawn from the 2023 PLACES release (2021 BRFSS data) because those states did not meet minimum data collection requirements for the 2022 or 2023 BRFSS surveys. All other states use the 2025 PLACES release (2023 BRFSS data).

A number of other variables were considered for inclusion, such as Gini coefficient, housing development growth, ORLP potential, and access to motorized trails. However, usually for reasons of data availability or suitability at the municipal scale, these were not included in the final analysis.

## Variable Summary

| CODE | VARIABLE | GOAL | SCALE |
|---|---|---|---|
| ORR_01 | Risk of Losses to Flooding | Outdoor Risks and Resources | 1 = Low Risk / 10 = High Risk |
| ORR_02 | Need for Heat Adaptation by Mid-Century | Outdoor Risks and Resources | 1 = Low Need / 10 = High Need |
| ORR_03 | Risk of Losses to Wildfire | Outdoor Risks and Resources | 1 = Low Risk / 10 = High Risk |
| ORR_04 | Area of Resilient Lands within 30 miles | Outdoor Risks and Resources | 1 = Least Area / 10 = Most Area |
| ORR_06 | Area of Biodiverse Lands within 30 miles | Outdoor Risks and Resources | 1 = Least Area / 10 = Most Area |
| ORR_07 | Areas of Importance to Drinking Water within 30 miles | Outdoor Risks and Resources | 1 = Least Area / 10 = Most Area |
| | Restored or Abandoned Minelands within 30 | | |

| | | | |
|---|---|---|---|
| ORR_08 | miles | Outdoor Risks and Resources | 1 = Fewest Opportunities / 10 = Most Opportunities |
| ORR_09 | USDA Natural Amenities Index | Outdoor Risks and Resources | 1 = Least Favorable / 10 = Most Favorable |
| ORR_A11 | Combined Outdoor Risks and Resources | Outdoor Risks and Resources | 1 = Low / 10 = High |
| ECN_01 | Community Health (CDC) | Economic and Community Need | 1 = Best Health / 10 = Worst Health |
| ECN_02 | Areas of Enduring Poverty (ERS) | Economic and Community Need | 0 = Least Poverty / 10 = Highest Poverty |
| ECN_03 | Disability (CDC) | Economic and Community Need | 1 = Least Disability / 10 = Highest Disability |
| ECN_04 | Labor Force Participation Rate | Economic and Community Need | 1 = Highest Participation / 10 = Lowest Participation |
| ECN_05 | Families with Children under 18 | Economic and Community Need | 1 = Fewest Children / 10 = Most Children |
| ECN_07 | FEMA Assistance per Capita since 2011 | Economic and Community Need | 1 = Lowest Assistance / 10 = Highest Assistance |
| ECN_08 | Unemployment (BLS) | Economic and Community Need | 1 = Least Unemployment / 10 = Highest Unemployment |
| ECN_09 | Municipal Capacity Index | Economic and Community Need | 0 = Most Capable / 10 = Least Capable |
| ECN_A11 | Combined Economic and Community Need | Economic and Community Need | 1 = Lowest Need / 10 = Highest Need |
| RNA_01 | Ten Minute Walk Park Access (Urban only) | Recreation Need and Access | 1 = Most Served / 10 = Least Served |
| RNA_02 | 30 Min Drive: Boating | Recreation Need and Access | 1 = Most Served / 10 = Least Served |
| RNA_03 | 30 Min Drive: Hiking Trails | Recreation Need and Access | 1 = Most Served / 10 = Least Served |
| RNA_05 | 30 Min Drive: Camping | Recreation Need and Access | 5 = Most Served / 10 = Least Served |
| RNA_06 | 30 Min Drive: Birding | Recreation Need and Access | 1 = Most Served / 10 = Least Served |
| RNA_07 | 30 Min Drive: Hunting | Recreation Need and Access | 1 = Most Served / 10 = Least Served |
| RNA_A11 | Combined Recreation Access Need | Recreation Need and Access | 1 = Least Need / 10 = Most Need |
| ORE_01 | Outdoor Rec Businesses per capita | Outdoor Recreation Economy | 1 = Fewest Businesses / 10 = Most Businesses |
| ORE_02 | Outdoor Rec Sales per capita | Outdoor Recreation Economy | 1 = Lowest Sales / 10 = Highest Sales |
| ORE_03 | Outdoor Rec Employment per capita | Outdoor Recreation Economy | 1 = Lowest Employment / 10 = Highest Employment |
| ORE_05 | 2030 Potential Consumer Spending | Outdoor Recreation Economy | 1 = Lowest Potential Spending / 10 = Highest Potential Spending |
| ORE_A11 | Combined Outdoor Recreation Economy | Outdoor Recreation Economy | 1 = Smaller Outdoor Economy / 10 = Larger Outdoor Economy |
| FPP_01 | LWCF - Stateside | Federal Funding Program Potential | 1 = Lowest Potential / 10 = Highest Potential |
| FPP_02 | Recreational Trails Program | Federal Funding Program Potential | 1 = Lowest Potential / 10 = Highest Potential |
| FPP_03 | USFS Community Forest Program | Federal Funding Program Potential | 1 = Lowest Potential / 10 = Highest Potential |
| FPP_04 | USDA FS Urban & Community Forestry | Federal Funding Program Potential | 1 = Lowest Potential / 10 = Highest Potential |
| FPP_05 | EPA Brownfields | Federal Funding Program Potential | 1 = Least Brownfields / 10 = Most Brownfields |
| FPP_A11 | Combined Federal Funding Potential | Federal Funding Program Potential | 1 = Lowest Potential / 10 = Highest Potential |

# Outdoor Risks and Resources (ORR)

8 individual variables plus a combined value.

## Risk of Losses to Flooding

ORR_01

**SUMMARY**

Measures expected annual economic losses from inland flooding for each municipality using FEMA's National Risk Index. Communities with higher flood risk face greater economic vulnerability and greater need for resilient recreation infrastructure.

***Scale:*** *1 = Low Risk | 10 = High Risk*

**DATA SOURCE**

FEMA National Risk Index

**SOURCE DATA DESCRIPTION**

Vector, polygon. Census tract level. Standalone federal dataset. NRI v1.20, December 2025.

**METHODOLOGY**

The NRI assigns each census tract an Inland Flooding Expected Annual Loss Rating on a categorical scale from No Expected Annual Losses to Very High. Census tracts are spatially intersected with each municipality boundary. The mean flood risk value across all intersecting tracts is calculated per municipality. The resulting mean values for all 4,147 municipalities in the study area are then classified into 10 groups using Jenks natural breaks. Municipalities with the highest mean flood risk values receive a class of 10; those with the lowest receive 1.

## Need for Heat Adaptation by Mid-Century

ORR_02

**SUMMARY**

Projects how much summer temperatures will increase by mid-century under the RCP 8.5 climate scenario. Communities facing larger temperature increases will need outdoor recreation facilities adapted for hotter conditions, including shade structures and cooled trail corridors.

***Scale:*** *1 = Low Need | 10 = High Need*

**DATA SOURCE**

CLIMRR, Argonne National Laboratory

**SOURCE DATA DESCRIPTION**

Raster-derived vector grid, polygon. 12km resolution. Standalone federal dataset. Argonne National Laboratory, 2025.

**METHODOLOGY**

ClimRR provides dynamically downscaled climate projections at 12km grid resolution. This analysis uses the Average Daily Maximum Wet-Bulb Globe Temperature (WBGT) for the summer season, comparing historical baseline and mid-century RCP 8.5 projections. The difference between mid-century projected WBGT and historical WBGT is calculated for each grid cell to produce a change value. Each municipality is assigned the change value of its overlapping grid cell. The change values across all study area municipalities are classified into 10 groups using Jenks natural breaks, with the greatest projected temperature increase assigned a value of 10.

## Risk of Losses to Wildfire

ORR_03

**SUMMARY**

Measures expected annual losses from wildfire based on FEMA's National Risk Index. Communities at higher wildfire risk face barriers to outdoor recreation but also increased need for land management and fire-resilient infrastructure.

***Scale:*** *1 = Low Risk | 10 = High Risk*

**DATA SOURCE**

FEMA National Risk Index

**SOURCE DATA DESCRIPTION**

Vector, polygon. Census tract level. Standalone federal dataset. NRI v1.20, December 2025.

**METHODOLOGY**

The NRI assigns each census tract a Wildfire Expected Annual Loss Rating on a categorical scale. Census tracts are spatially intersected with each municipality boundary. The mean wildfire risk value across all intersecting tracts is calculated per municipality. Values across the study area are classified into 10 groups using Jenks natural breaks, with the highest-risk municipalities assigned a value of 10.

## Area of Resilient Lands within 30 miles

ORR_04

**SUMMARY**

Measures the proportion of land classified as resilient by The Nature Conservancy within a 30-mile buffer around each municipality. Communities near resilient landscapes have greater potential for sustainable outdoor recreation that can withstand climate change.

***Scale:*** *1 = Least Area | 10 = Most Area*

**DATA SOURCE**

The Nature Conservancy, Resilient and Connected Network

**SOURCE DATA DESCRIPTION**

Raster, 30m resolution. National coverage. Standalone. Resilient Land Mapping Tool v2.0.53, 2025.

**METHODOLOGY**

A 30-mile simple buffer is generated around each municipality boundary. Within each buffer, the TNC Resilient and Connected Lands dataset is sampled to assess the dominant terrestrial resilience class. Municipalities near the most resilient lands receive a value of 10; those near the least resilient lands receive 1. Intermediate values are assigned using Jenks natural breaks across the study area.

## Area of Biodiverse Lands within 30 miles

ORR_06

**SUMMARY**

Measures the fraction of land with recognized biodiversity value from The Nature Conservancy within a 30-mile buffer. Biodiverse landscapes attract nature-based tourism and support activities like birding and wildlife observation.

***Scale:*** *1 = Least Area | 10 = Most Area*

**DATA SOURCE**

The Nature Conservancy, Resilient and Connected Network

**SOURCE DATA DESCRIPTION**

Raster, 30m resolution. National coverage. Standalone. Resilient Land Mapping Tool v2.0.53, 2025.

**METHODOLOGY**

A 30-mile buffer is generated around each municipality. The percentage of the buffered area covered by land with Recognized Biodiversity Value from the TNC Resilient and Connected Network is calculated. Percentages across the study area are classified into 10 groups using Jenks natural breaks, with the most biodiverse areas assigned a value of 10.

## Areas of Importance to Drinking Water within 30 miles

ORR_07

**SUMMARY**

Assesses the importance of nearby watersheds to drinking water supply. Communities near critical watersheds have a stronger case for land protection projects that serve both water quality and recreation.

***Scale:*** *1 = Least Area | 10 = Most Area*

**DATA SOURCE**

USFS Forests to Faucets 2.0

**SOURCE DATA DESCRIPTION**

Vector, polygon. HUC-12 watershed boundaries. Standalone federal dataset. USFS Forests to Faucets 2.0, February 2022 (updated September 2023).

**METHODOLOGY**

For each municipality, all HUC-12 watersheds within a 30-mile buffer are identified from the Forests to Faucets 2.0 dataset. Two USFS indices are averaged per watershed: Relative Ability to Produce Clean Water (ABCW_R) and Relative Importance to Surface Drinking Water (IMP_R). The two averages are summed per municipality. The combined values across the study area are classified into 10 groups using Jenks natural breaks, with the highest-valued watersheds assigned 10.

## Restored or Abandoned Minelands within 30 miles

ORR_08

**SUMMARY**

Counts abandoned mine land sites within a 30-mile buffer, distinguishing between unfunded hazards, funded projects, and completed reclamation. Abandoned mines represent both environmental risks and reclamation opportunities that could produce new recreation lands.

***Scale:*** *1 = Fewest Opportunities | 10 = Most Opportunities*

**DATA SOURCE**

OSMRE Abandoned Mine Land Inventory System (e-AMLIS)

**SOURCE DATA DESCRIPTION**

Vector, point locations. National coverage. Standalone federal dataset. OSMRE e-AMLIS, downloaded 2026.

**METHODOLOGY**

A 30-mile buffer is generated around each municipality. Abandoned mine land sites from the e-AMLIS inventory are counted within each buffer and separated by status: unfunded (hazards not yet addressed), funded (reclamation in progress), and completed (sites already reclaimed). The unfunded and funded counts are treated as separate sub-criteria. Each sub-criterion is classified 1-10 using Jenks natural breaks across the study area. The two sub-values are combined and reclassified to a final 1-10 scale, also using Jenks natural breaks.

## USDA Natural Amenities Index

ORR_09

**SUMMARY**

Rates the natural landscape and climate characteristics that make a place attractive for outdoor recreation. The index captures warm winters, sunny winters, mild summers, low humidity, varied terrain, and proximity to water. The selection and weighting of sub-components was guided by the AUO Technical Advisory Committee.

***Scale:*** *1 = Least Favorable | 10 = Most Favorable*

**DATA SOURCE**

USDA Economic Research Service

**SOURCE DATA DESCRIPTION**

Tabular, county level. Standalone federal dataset. USDA Natural Amenities Scale. Lower 48 states.

**METHODOLOGY**

Each municipality is assigned the Natural Amenities Index value for its enclosing county. Rather than using the published 1-7 standard-deviation-based ranking, the raw index values are reclassified across the study area using Jenks natural breaks into 10 groups, which provides finer discrimination among Appalachian counties where the raw values cluster in a narrow range. Counties with the most favorable combination of climate and landscape factors receive 10.

## Combined Outdoor Risks and Resources

ORR_A11

**SUMMARY**

Provides an overall measure of outdoor risks and natural resource potential by combining all individual ORR variable values.

***Scale:*** *1 = Low | 10 = High*

**METHODOLOGY**

Individual ORR class values (ORR_01 through ORR_09) are summed for each municipality. The sums are classified into 10 groups using Jenks natural breaks, producing a combined 1-10 value.

# Economic and Community Need (ECN)

8 individual variables plus a combined value.

## Community Health (CDC)

ECN_01

**SUMMARY**

Combines four local health indicators from the CDC PLACES dataset: lack of health insurance coverage, fair or poor general health, low physical activity, and social isolation. Communities with worse health outcomes stand to benefit more from accessible outdoor spaces.

***Scale:*** *1 = Best Health | 10 = Worst Health*

**DATA SOURCE**

CDC PLACES, Local Data for Better Health

**SOURCE DATA DESCRIPTION**

Vector, polygon. Place-level estimates derived from BRFSS survey data and Census population. Standalone federal dataset. CDC PLACES 2025 release (2023 BRFSS data for most measures).

**METHODOLOGY**

For each municipality, four adjusted prevalence values are extracted from the CDC PLACES dataset: ACCESS2 (lack of health insurance), GHLTH (fair or poor general health), LPA (low physical activity), and ISOLATION (social isolation). Each of the four indicators is independently classified into 10 groups using Jenks natural breaks across the study area, producing a sub-value of 1-10 for each. The four sub-values are summed per municipality (possible range 4-40), and the sums are reclassified into a final 1-10 scale using Jenks natural breaks.

## Areas of Enduring Poverty (ERS)

ECN_02

**SUMMARY**

Identifies whether a municipality lies in a county designated as experiencing enduring poverty by the USDA Economic Research Service. Enduring poverty counties have maintained a poverty rate of 20% or higher for at least five consecutive measurement periods spanning roughly 40 years.

***Scale:*** *0 = Least Poverty | 10 = Highest Poverty*

**DATA SOURCE**

USDA Economic Research Service, Poverty Area Measures

**SOURCE DATA DESCRIPTION**

Tabular with county geometry. County level. Standalone federal dataset. ERS Poverty Area Measures, September 2025 edition.

**METHODOLOGY**

Each municipality is assigned a categorical variable based on the ERS Enduring Poverty designation of its enclosing county. Counties at the highest enduring poverty level (ERS designation 3) receive 10, moderate level (designation 1) receives 5, and non-designated counties receive 0.

## Disability (CDC)

ECN_03

**SUMMARY**

Measures the prevalence of disability among adults using CDC PLACES local health data. Communities with higher disability rates need more accessible outdoor recreation infrastructure, including ADA-compliant trails and facilities.

***Scale:*** *1 = Least Disability | 10 = Highest Disability*

**DATA SOURCE**

CDC PLACES, Local Data for Better Health

**SOURCE DATA DESCRIPTION**

Vector, polygon. Place-level estimates. Standalone federal dataset. CDC PLACES 2025 release.

**METHODOLOGY**

The adjusted prevalence of any disability (DISABILITY_AdjPrev) is extracted from the CDC PLACES dataset for each municipality. This measure combines hearing, vision, cognitive, mobility, self-care, and independent living difficulties into a single composite rate. Values across the study area are classified into 10 groups using Jenks natural breaks, with the highest disability prevalence assigned a value of 10.

## Labor Force Participation Rate (Census Bureau)

ECN_04

**SUMMARY**

Classifies county-level labor force participation rates. Lower participation may indicate economic distress and greater potential benefit from job-creating outdoor recreation investment.

***Scale:*** *1 = Highest Participation | 10 = Lowest Participation*

**DATA SOURCE**

US Census Bureau, American Community Survey

**SOURCE DATA DESCRIPTION**

Vector, polygon. County-level boundaries with ACS tabular data joined. Standalone federal dataset. ACS Table S2301 (5-year estimates).

**METHODOLOGY**

Labor force participation rates are calculated by county from ACS Table B23027. Rates are classified across the study area into 10 groups using Jenks natural breaks, with the lowest participation rates (indicating highest economic need) assigned a value of 10. Each municipality inherits the classification of its enclosing county.

## Families with Children under 18 (Census Bureau)

ECN_05

**SUMMARY**

Measures the number of households with children under 18 in each municipality. More families with children means greater demand for parks, playgrounds, trails, and family-oriented outdoor recreation.

***Scale:*** *1 = Fewest Children | 10 = Most Children*

**DATA SOURCE**

US Census Bureau, American Community Survey

**SOURCE DATA DESCRIPTION**

Vector, polygon. Place-level boundaries with ACS tabular data joined. Standalone federal dataset. ACS Table B11005.

**METHODOLOGY**

The count of households with people under 18 is extracted for each municipality from ACS Table B11005. Counts across the study area are classified into 10 groups using Jenks natural breaks, with municipalities having the most families with children assigned a value of 10.

## FEMA Assistance per Capita since 2011

ECN_07

**SUMMARY**

Calculates total per capita FEMA spending by county since 2011, combining Public Assistance and Hazard Mitigation funding. COVID-19 relief spending is excluded. Higher disaster spending signals communities that have faced repeated natural hazards.

***Scale:*** *1 = Lowest Assistance | 10 = Highest Assistance*

**DATA SOURCE**

Federal Emergency Management Agency, OpenFEMA

**SOURCE DATA DESCRIPTION**

Tabular with county geometry. County level. Compilation of two federal datasets: OpenFEMA Public Assistance Funded Projects Details and Hazard Mitigation Assistance Projects v4. Population from 2020 Decennial Census.

**METHODOLOGY**

FEMA Public Assistance and Hazard Mitigation Assistance project funding is summed per county for all disasters declared since 2011. Rows coded as "Statewide" are excluded. COVID-19-related spending is excluded by filtering out all disaster numbers associated with incidents typed as "Biological" in the Public Assistance data (80 disaster declarations, all from 2020). The county total is divided by 2020 Census population to produce per capita spending. Per capita values are classified into 10 groups using Jenks natural breaks, with the highest per capita spending assigned 10. Municipalities inherit the classification of their enclosing county.

## Unemployment (Bureau of Labor Statistics)

ECN_08

**SUMMARY**

Classifies county-level unemployment rates. Higher unemployment indicates economic distress and greater potential benefit from outdoor recreation economic development.

***Scale:*** *1 = Least Unemployment | 10 = Highest Unemployment*

**DATA SOURCE**

US Bureau of Labor Statistics

**SOURCE DATA DESCRIPTION**

Tabular with county geometry. County level. Standalone federal dataset. BLS Local Area Unemployment Statistics, 2024 annual averages.

**METHODOLOGY**

County-level unemployment rates from BLS annual averages are classified across the study area into 10 groups using Jenks natural breaks, with the highest unemployment assigned 10. Each municipality inherits the classification of its enclosing county.

## Municipal Capacity Index (Headwaters Economics)

ECN_09

**SUMMARY**

Uses Headwaters Economics' Rural Capacity Index to measure a community's ability to plan, fund, and carry out development projects. The index is built from 10 indicators covering local government staffing, institutional capacity, economic opportunity, and education and engagement. Lower capacity values identify communities that may need more technical assistance to pursue outdoor recreation projects.

***Scale:*** *0 = Most Capable | 10 = Least Capable*

**DATA SOURCE**

Headwaters Economics

**SOURCE DATA DESCRIPTION**

Tabular with place geometry. Municipal/community level. Standalone nonprofit dataset. Rural Capacity Index, updated 2024.

**METHODOLOGY**

The overall Headwaters Economics capacity index value (scale 0-100) is assigned to each municipality. Values are classified across the study area into 10 groups using Jenks natural breaks, with the lowest capacity (greatest need for assistance) assigned a value of 10.

## Combined Economic and Community Need

ECN_A11

**SUMMARY**

Provides an overall measure of economic distress and community need by combining all individual ECN variable values.

***Scale:*** *1 = Lowest Need | 10 = Highest Need*

**METHODOLOGY**

Individual ECN class values (ECN_01 through ECN_09) are summed for each municipality. The sums are classified into 10 groups using Jenks natural breaks, producing a combined 1-10 value.

# Recreation Need and Access (RNA)

6 individual variables plus a combined value.

## Ten Minute Walk Park Access (Urban only)

RNA_01

**SUMMARY**

Measures the percentage of each urban municipality's population that lacks access to a park within a 10-minute walk. Rural municipalities are not assessed due to the coarseness of census data relative to their boundaries.

***Scale:*** *1 = Most Served | 10 = Least Served*

**DATA SOURCE**

Trust for Public Land ParkServe; US Census Block Points

**SOURCE DATA DESCRIPTION**

Vector, polygon (park service areas) and point (census block centroids). National urban coverage. Esri StreetMap Premium network dataset for walk-time calculation.

**METHODOLOGY**

TPL's ParkServe database calculates a half-mile walkable service area from each park's public access points using Esri's StreetMap Premium network dataset, which accounts for physical barriers such as highways, train tracks, or rivers without bridges. Each urban municipality is classified 1-10 using Jenks natural breaks based on the percentage of people that do not have 10-minute walk access. Municipalities with greater percentages of unserved population receive higher values up to 10.

## 30 Minute Drive Time Access to Parks with Boating Activities

RNA_02

**SUMMARY**

Counts boat ramp and water access points on public land within a 30-minute drive of each municipality. Boating access supports fishing, swimming, and water sports, all of which generate direct economic activity for nearby communities. Fewer access points indicate greater unmet need.

***Scale:*** *1 = Most Served | 10 = Least Served*

**DATA SOURCE**

USGS; USFS; NPS; Open Street Map; state agency data from AL, GA, KY, MS, NC, NY, OH, PA, TN, VA

**SOURCE DATA DESCRIPTION**

Vector, point. Compilation from multiple federal and state sources into a single dataset of boating access locations across the Appalachian study area.

**METHODOLOGY**

Boating access points are compiled into a single point dataset. The number of boat ramps overlapping public land within each municipality's 30-minute drive time service area is counted. Drive time service areas are generated using Esri StreetMap Premium. Counts are classified into 10 groups using a quantile function, with municipalities having the smallest number of boat ramps assigned a value of 10 (greatest need) and those with the most assigned 1.

## 30 Minute Drive Time Access to Parks with Hiking Trails

RNA_03

**SUMMARY**

Uses AllTrails visitor data to measure trail activity within a 30-minute drive. Fewer trail visits indicate less existing hiking infrastructure and greater need for trail development.

***Scale:*** *1 = Most Served | 10 = Least Served*

**DATA SOURCE**

AllTrails

**SOURCE DATA DESCRIPTION**

Vector, point. Proprietary trail cluster data with visitor counts.

**METHODOLOGY**

AllTrails cluster data provides the number of individual visits to each trailhead cluster. For each municipality, total trailhead visits within a 30-minute drive time service area are summed. Visit sums are classified into 10 groups using a quantile function, with the smallest number of trail cluster visits assigned 10 and the most assigned 1.

## 30 Minute Drive Time Access to Parks with Camping

RNA_05

**SUMMARY**

Counts campground locations on public land within a 30-minute drive. Access to camping supports local economies through overnight stays,

equipment purchases, and related spending.

***Scale:*** *5 = Most Served | 10 = Least Served*

**DATA SOURCE**

Open Street Map; USGS National Map; state agency data from AL, GA, KY, MS, NC, NY, OH, PA, TN, VA, WV

**SOURCE DATA DESCRIPTION**

Vector, point. Compilation from multiple federal, OSM, and state sources.

**METHODOLOGY**

Campground locations overlapping public land within each municipality's 30-minute drive time service area are counted. Because the range of campground counts only allowed creation of 5 quantile classes, all values were shifted upward by 4, producing a scale from 5 to 10. Municipalities with the fewest campgrounds receive 10.

## 30 Minute Drive Time Access to Parks with Birding Opportunities

RNA_06

**SUMMARY**

Sums eBird observation events on publicly accessible conserved land within a 30-minute drive. eBird event counts serve as a proxy for both birding opportunity and the overall quality of nature-based experiences.

***Scale:*** *1 = Most Served | 10 = Least Served*

**DATA SOURCE**

eBird; USGS Protected Areas Database

**SOURCE DATA DESCRIPTION**

Vector, polygon. Compilation of eBird citizen science data joined to USGS PAD-US conserved land polygons.

**METHODOLOGY**

eBird events are counted for each conserved land parcel where public access is designated as open. For each municipality, total eBird events on public land within a 30-minute drive are summed. Event sums are classified into 10 groups using a quantile function, with the fewest eBird events assigned 10 and the most assigned 1.

## 30 Minute Drive Time Access to Parks with Hunting Opportunities

RNA_07

**SUMMARY**

Counts onX hunting access points on public land within a 30-minute drive. Hunting access supports local food supply and community economies through equipment sales and license fees.

***Scale:*** *1 = Most Served | 10 = Least Served*

**DATA SOURCE**

onX

**SOURCE DATA DESCRIPTION**

Vector, point. Proprietary hunting access point locations on public land.

**METHODOLOGY**

onX hunting access points on public land within each municipality's 30-minute drive time service area are counted. Counts are classified into 10 groups using a quantile function, with the fewest hunting access points assigned 10 and the most assigned 1.

## Combined Recreation Access Need

RNA_A11

**SUMMARY**

Provides an overall measure of recreation access gaps by combining all individual RNA variable values. Urban and rural municipalities are classified separately because urban areas include the 10-minute walk access variable, which is not calculated for rural areas.

***Scale:*** *1 = Least Need | 10 = Most Need*

**METHODOLOGY**

Individual RNA class values are summed per municipality. Urban and rural sums are classified separately into 10 groups, with municipalities having the greatest combined access gaps assigned a value of 10.

# Outdoor Recreation Economy (ORE)

4 individual variables plus a combined value.

## Current Outdoor Recreation Businesses per capita

ORE_01

**SUMMARY**

Counts outdoor recreation businesses within 5 miles of each municipality using Esri Business Analyst point-of-interest data. The count is normalized per 1,000 residents to allow comparison across communities of different sizes.

***Scale:*** *1 = Fewest Businesses | 10 = Most Businesses*

**DATA SOURCE**

Data Axle, SafeGraph, Foursquare via Esri Business Analyst

**SOURCE DATA DESCRIPTION**

Vector, point (business locations). Proprietary compilation via Esri Business Analyst, 2025.

**METHODOLOGY**

Using Esri Business Analyst POI search, the number of outdoor recreation businesses matching selected NAICS codes within 5 miles of each municipality is counted and divided by population in thousands. Per capita rates across the study area are classified into 10 groups using a quantile function. The 5-mile search radius reflects the local nature of small business presence.

## Current Outdoor Recreation Sales per capita

ORE_02

**SUMMARY**

Calculates total sales revenue for outdoor recreation businesses within 30 miles of each municipality, normalized per 1,000 residents.

***Scale:*** *1 = Lowest Sales | 10 = Highest Sales*

**DATA SOURCE**

Bureau of Labor Statistics via Esri Business Analyst

**SOURCE DATA DESCRIPTION**

Vector, polygon (enriched municipality boundaries). Proprietary via Esri Business Analyst, June 2025.

**METHODOLOGY**

Total sales volume for outdoor recreation businesses matching selected NAICS codes within 30 miles of each municipality is summed and divided by population in thousands. The 30-mile radius captures the broader regional economic footprint. Per capita sales across the study area are classified into 10 groups using a quantile function.

## Current Outdoor Recreation Employment per capita

ORE_03

**SUMMARY**

Counts individuals employed by outdoor recreation businesses within 30 miles of each municipality, normalized per 1,000 residents.

***Scale:*** *1 = Lowest Employment | 10 = Highest Employment*

**DATA SOURCE**

Bureau of Labor Statistics via Esri Business Analyst

**SOURCE DATA DESCRIPTION**

Vector, polygon (enriched municipality boundaries). Proprietary via Esri Business Analyst, June 2025.

**METHODOLOGY**

The number of employees at outdoor recreation businesses matching selected NAICS codes within 30 miles of each municipality is counted and divided by population in thousands. Per capita employment across the study area is classified into 10 groups using a quantile function.

## 2030 Potential Outdoor Recreation Consumer Spending

ORE_05

**SUMMARY**

Projects 2030 consumer spending on outdoor recreation items and services within each municipality, based on current spending patterns and demographic projections.

***Scale:*** *1 = Lowest Potential Spending | 10 = Highest Potential Spending*

**DATA SOURCE**

Bureau of Labor Statistics via Esri Business Analyst

**SOURCE DATA DESCRIPTION**

Vector, polygon (enriched municipality boundaries). Proprietary via Esri Business Analyst, June 2025 vintage with 2030 projections.

**METHODOLOGY**

Potential consumer spending in 2030 on outdoor recreation items and services is calculated per capita within each municipality using Esri Business Analyst demographic projections. Per capita projected spending is classified into 10 groups using a quantile function.

## Combined Outdoor Recreation Economy

ORE_A11

**SUMMARY**

Provides an overall measure of existing and projected outdoor recreation economic activity by combining all individual ORE variable values.

***Scale:*** *1 = Smaller Outdoor Economy | 10 = Larger Outdoor Economy*

**METHODOLOGY**

Individual ORE class values (ORE_01 through ORE_05) are summed for each municipality. The sums are classified into 10 groups using Jenks natural breaks, producing a combined 1-10 value.

# Federal Funding Program Potential (FPP)

5 individual variables plus a combined value.

## Land and Water Conservation Fund - Stateside

FPP_01

**SUMMARY**

Assesses each municipality's alignment with known LWCF Stateside proposal criteria. The assessment combines three factors: need for public land, trail access need, and continuity with past LWCF-funded projects.

***Scale:*** *1 = Lowest Potential | 10 = Highest Potential*

**DATA SOURCE**

USGS Protected Areas Database v4.0; AllTrails; TPL LWCF projects database

**SOURCE DATA DESCRIPTION**

Vector, polygon and point. Compilation of PAD-US public land boundaries, AllTrails trail usage data, and TPL's internal LWCF project location database.

**METHODOLOGY**

Three sub-values are calculated: 1) Public land per person within a 30-minute drive, classified 1-10. 2) Trail access need from RNA_03. 3) LWCF project continuity: count of past LWCF/ORLP projects within 30 miles, normalized 1-10. The three sub-values are summed and reclassified 1-10 using Jenks natural breaks.

## Recreational Trails Program

FPP_02

**SUMMARY**

Assesses alignment with Recreational Trails Program criteria by combining trail infrastructure, recreation need, public land availability, and economic need.

***Scale:*** *1 = Lowest Potential | 10 = Highest Potential*

**DATA SOURCE**

Multiple trail datasets; RNA and ECN goal values; USGS PAD-US

**SOURCE DATA DESCRIPTION**

Vector, polyline (trails) and polygon (service areas). Compilation of trail data from multiple federal, state, and OSM sources.

**METHODOLOGY**

Four sub-values: 1) Existing trail mileage within a 30-minute drive, classified 1-10. 2) Overall recreation need (RNA_ALL). 3) Public land per person, classified 1-10. 4) Economic and community need (ECN_All). Summed and reclassified 1-10 using Jenks natural breaks.

## USFS Community Forest Program

FPP_03

**SUMMARY**

Measures percent tree canopy within each municipality. Communities with higher forest cover have greater potential for community forest projects meeting the USFS program's eligibility threshold of 75% forest cover and a minimum of 5 acres.

***Scale:*** *1 = Lowest Potential | 10 = Highest Potential*

**DATA SOURCE**

Earth Daily tree canopy data

**SOURCE DATA DESCRIPTION**

Raster-derived vector, polygon. Tree canopy percentage per municipality. Earth Daily tree canopy, 2025.

**METHODOLOGY**

Percent tree canopy within each municipality boundary is calculated from Earth Daily tree canopy raster data. Municipalities are classified 1-10 with those having the highest canopy percentage assigned a value of 10.

## USDA Forest Service Urban and Community Forestry Program

FPP_04

**SUMMARY**

Assesses alignment with the USDA Forest Service State, Private & Tribal Forestry program by combining nine factors that reflect the program's funding priorities: forest health, wildfire resilience, tree canopy, clean water, heat adaptation, public health, recreation access, flood mitigation, and tribal forestry capacity.

***Scale:*** *1 = Lowest Potential | 10 = Highest Potential*

**DATA SOURCE**

Multiple sources: FEMA NRI, Earth Daily, USFS F2F, CLIMRR, CDC PLACES, RNA and ORR goal values, tribal land boundaries

**METHODOLOGY**

Nine sub-values aligned with funding priorities: 1) Forest acreage within 30 miles. 2) Wildfire risk (ORR_03). 3) Tree canopy percentage. 4) Drinking water protection (ORR_07). 5) Heat adaptation (ORR_02). 6) Community health (ECN_01). 7) Recreation need (RNA_ALL). 8) Flood risk (ORR_01). 9) Tribal forestry capacity: 5-point bonus for municipalities within 30 miles of federally recognized tribal lands. Summed and reclassified 1-10 using Jenks natural breaks.

## EPA Brownfields

FPP_05

**SUMMARY**

Counts EPA-registered brownfield sites within a 30-mile buffer. More sites indicate greater potential for reclamation projects that create new recreation land.

***Scale:*** *1 = Least Brownfields | 10 = Most Brownfields*

**DATA SOURCE**

EPA Assessment Cleanup and Redevelopment Exchange System (ACRES)

**SOURCE DATA DESCRIPTION**

Vector, point. EPA Facility Registry Service sites from the ACRES database. National coverage. Standalone federal dataset.

**METHODOLOGY**

EPA brownfield locations from the ACRES database are counted within a 30-mile buffer of each municipality. Counts are classified 0-10, with municipalities having the most brownfield sites assigned 10. Municipalities with no nearby brownfields receive 0.

## Combined Federal Funding Program Potential

FPP_All

**SUMMARY**

Provides an overall measure of alignment with federal outdoor recreation funding programs. Urban and rural municipalities are classified separately.

***Scale:*** *1 = Lowest Potential | 10 = Highest Potential*

**METHODOLOGY**

Individual FPP class values (FPP_01 through FPP_05) are summed per municipality. Urban and rural sums are classified separately into 10 groups using Jenks natural breaks, producing a combined 1-10 value.

## Contact

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