

# Regional profile

## Southwestern Pennsylvania, USA



### Overview

	Pennsylvania	USA
Size (km <sup>2</sup> )	115,883	9,150 million
Population	12.8 million	328 million
Population per km <sup>2</sup>	110	34
GDP per capita	€45,581	€52,303
Median household income	€51,949	€52,434
Per capita income	€28,742	€28,507
Unemployment rate	4.5%	3.6%

Data on size, population and population density from U.S. Census Bureau (2019), on Pennsylvania GDP per capita from Open Data Network (2017), on U.S. GDP per capita from World Bank (2018), on median household income and per capita income from U.S. Census Bureau (2018), on Pennsylvania unemployment from U.S. Bureau of Labor Statistics (2019) and on U.S. unemployment from U.S. Bureau of Labor Statistics (2020).



### Electricity generation mix

	Natural Gas	Coal	Renewables	Nuclear
PA	36%	21%	4%	39%
USA	38.4%	23.5%	17.5%	19.7%

Data on electricity generation by source in U.S. as of 2019 from U.S. Energy Information Administration (2020) and in Pennsylvania as of 2018 from U.S. Energy Information Administration (2019).



### Regional coal industry

**151**  
active coal mines



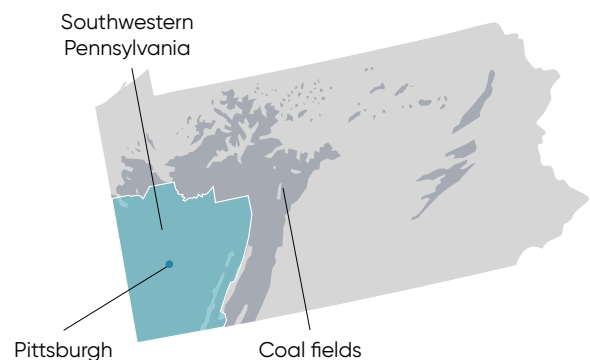
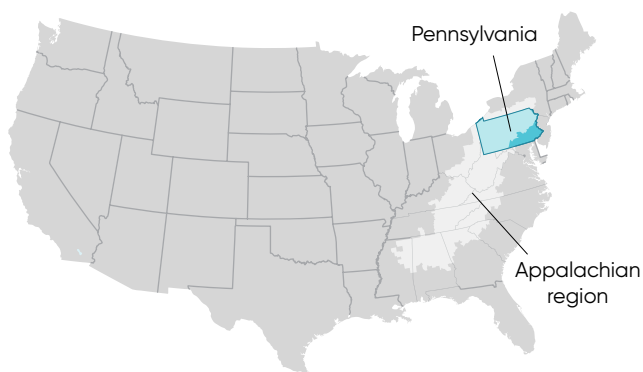
producing  
**50** million short tonnes of coal

providing  
**5,100** jobs in Pennsylvania



**19**  
coal power plants

Data on active coal mines, coal production, and employment in Pennsylvania as of 2018 from National Mining Association (2019), and on coal power plants in Pennsylvania from U.S. Energy Information Administration (2019).



### Region highlights

Pittsburgh provides a successful blueprint for the **economic revitalisation** of Rust Belt cities.

The Appalachian Regional Commission has supported **regional economic development** since 1965.

Federal bipartisan legislation currently under consideration could finance **mine reclamation projects** throughout Appalachia.



### Interesting fact



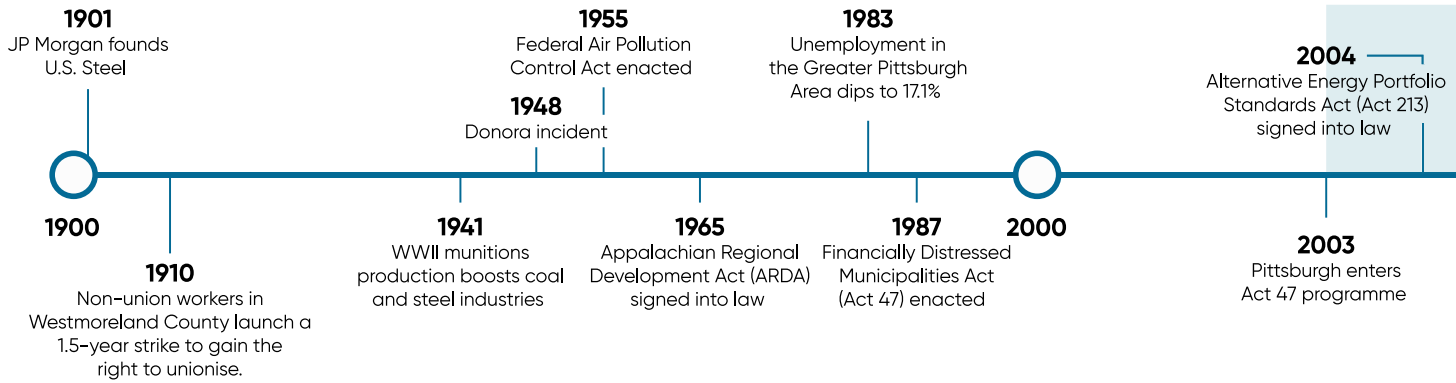
**25%**

of Pennsylvania's residents live outside urban areas

*Keywords:*

*Appalachian coal region, Pittsburgh, Appalachian Regional Commission (ARC), mine reclamation, federal-state partnership, retraining, broadband, tourism, RECLAIM Act of 2019, bipartisan legislation, executive order*

## Southwestern Pennsylvania in transition: key events in the coal phase-out



Pennsylvania is located in the Mid-Atlantic region of the eastern United States. Although 75% of the state’s land is rural, only 25% of its residents live outside urban areas.<sup>1</sup> Pennsylvania has rich coal reserves in the Appalachian Mountains, a major mountain range that runs through much of eastern North America from Alabama to Canada. The Marcellus Shale, the largest natural gas field in the United States, underlies roughly three fifths of the state.<sup>2</sup>

Pittsburgh is Pennsylvania’s second most populous city, and Allegheny County, in which Pittsburgh is located, is the state’s second most populous county.<sup>3</sup> Largely due to its geography, Pittsburgh played an important role in the industrial development of the US. The Monongahela and Allegheny rivers meet at Pittsburgh, forming the headwaters of the Ohio River.<sup>4</sup>

In the 19th and early 20th centuries, Pittsburgh’s port facilitated trade with cities throughout the southeastern, northeastern, and midwestern regions

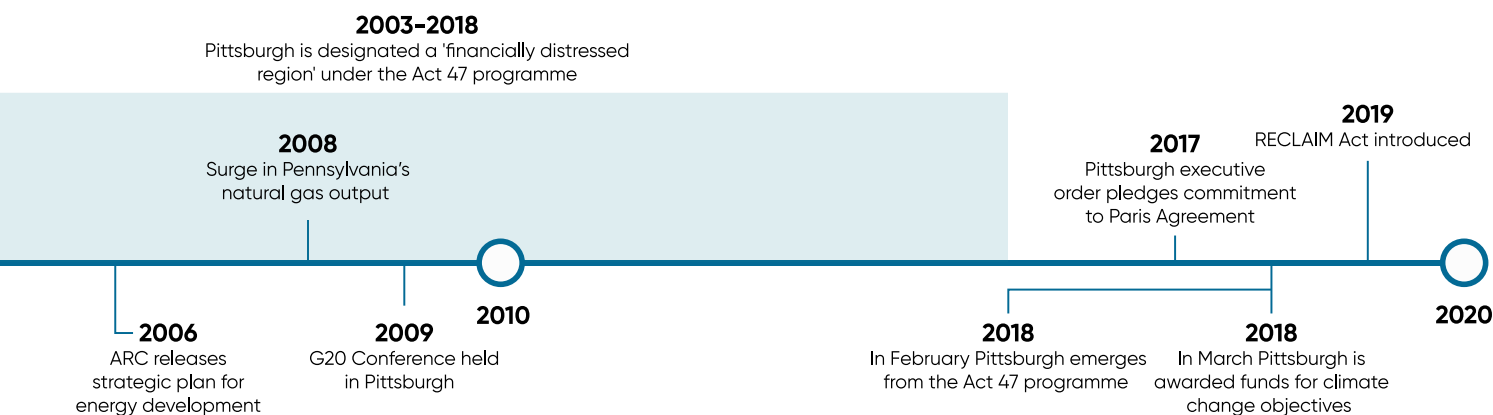
of the US, fuelling massive industrial growth in the area.<sup>5</sup> Coal available in the nearby mountains allowed the area to prosper from mining and ironmaking, particularly after the construction of an extensive railway system along the Appalachian corridor.<sup>6</sup>

The decline of the US manufacturing sector in the 1970s and 1980s exacted a heavy toll on Southwestern Pennsylvania. In the Greater Pittsburgh Area, unemployment reached 17.1%

in 1982, and Pittsburgh lost 30% of its residents between 1970 and 1990.<sup>7</sup> In 1987, the Pennsylvania legislature enacted the Financially Distressed Municipalities Act (Act 47), which provides financial support (e.g. debt restructuring) for the state’s ailing communities. Pittsburgh was designated a ‘financially distressed’ area in 2003 but, after implementing extensive fiscal reforms, emerged from the Act 47 programme in 2018.<sup>8</sup> Over the past two decades, Pittsburgh has



*The Appalachian Mountains run diagonally across Pennsylvania.*



introduced various measures to shed its reputation as a 'Rust Belt' city<sup>9</sup> and establish itself as a centre for biomedical research, banking, and education.<sup>10</sup>

In areas of Southwestern Pennsylvania outside Pittsburgh, economic recovery has been slower.<sup>11</sup> The boost in coal jobs promised by President Donald Trump during the 2016 presidential campaign has largely failed to materialise in the region.<sup>12</sup> In the largely rural counties of Southwestern Pennsylvania, persistent barriers to economic development include structurally deficient infrastructure, a lack of broadband, and the impact of opioid misuse and other 'diseases of despair'<sup>13</sup> that disproportionately affect communities throughout Appalachia.<sup>14</sup> Still, prospects for economic growth are better in Pennsylvania's Appalachian counties than in many other counties along the Appalachian range. As of 2020, Pennsylvania has only one county classified as 'economically distressed'; Kentucky, another coal-producing Appalachian state, has 38.<sup>15</sup>

## Coal production in Southwestern Pennsylvania

Pennsylvania has abundant reserves of anthracite ('hard') and bituminous ('soft') coal. Bituminous coal is much more abundant in the state and is primarily used for electricity generation and metal production.<sup>16</sup> The first bituminous mine near Pittsburgh opened in 1758.<sup>17</sup> Due to its chemical composition, bituminous coal from the 'Pittsburgh coal seam' was particularly suitable for ironmaking, and the city became the centre of the nation's steelmaking industry. The health and environmental consequences of the city's air pollution – largely due to coal production – became obvious in October 1948, when heavy smog in the mining town of Donora, 20 miles (32 km) north of Pittsburgh, led to the deaths of 20 people. The 'Donora incident' was the impetus for passage of the federal Air Pollution Control Act of 1955, the first Clean Air Act.<sup>18</sup>



*Smokestacks in the town of Donora, Pennsylvania, ca. 1910. Source: Library of Congress.*

Beginning in the 1950s, demand for Pittsburgh coal began to fall due to the decline of the domestic manufacturing sector, new regulations on air pollution, increased energy efficiency, and global competition.<sup>19</sup> The number of coal miners working in the state fell from 16,100 in 1990 to 4,800 in 2019.<sup>20</sup> The coal-industry downturn has had particularly dire effects on Pennsylvania's Appalachian region. This is partly because, due to centuries-long mining of Appalachian





*Pittsburgh skyline.*

coal, the region’s remaining reserves are deeper underground and therefore more expensive to extract than coal in other areas.<sup>21</sup> Between 2012 and 2017, mining employment fell by 14.8% in Appalachian Pennsylvania, but only by 2.2% in the non-Appalachian portion of the state.<sup>22</sup>

In recent years, large-scale fracking of natural gas reserves along Pennsylvania’s Marcellus Shale has decreased gas prices, further hobbling the region’s coal industry. The state now produces more than 20% of all US natural gas, second only to Texas.<sup>23</sup> In 2018, Pennsylvania was the source of 7% of the nation’s coal, making it the third-largest coal-producing state in the US. In the same year, only 5% of Pennsylvania’s electricity was generated from renewable energy sources. Since 2013, wind energy has been the largest source of renewable energy in the state.<sup>24</sup>

As of 2018, 101 bituminous mines and 50 anthracite mines were operating in Pennsylvania, employing 3,854

workers in underground mines and 1,531 in surface mines.<sup>25</sup>

## Energy-transition opportunities and challenges

By the 1950s, the widening gap between economic conditions in Appalachia and the rest of the United States had become clear. One third of Appalachian residents lived in poverty, and per capita income had fallen 23% below the national average.<sup>26</sup> The Conference of Appalachian Governors was formed in 1960 to address the economic decline. In 1965, President Lyndon Johnson signed the Appalachian Regional Development Act (ARDA) into law, forming the Appalachian Regional Commission (ARC) as a regional development agency.<sup>27</sup> Since then, the ARC, a federal-state partnership, has financed economic development in the Appalachian region, particularly in areas affected by the coal-industry downturn. The commission fosters

community participation through local development districts that identify specific development priorities.<sup>28</sup>

Pennsylvania established its first renewable energy target in 2004, when then-governor Edward Rendell signed the Alternative Energy Portfolio Standards Act (Act 213) into law. This legislation requires electricity providers to include a certain percentage of electricity from renewable energy in all electricity sold to retail customers each year.<sup>29</sup> The act also establishes standards for the grid connection of consumer-operated renewable energy technology like solar panels.<sup>30</sup>

In 2006, the ARC released A Regional Blueprint for Economic and Energy Development, which sets out a strategic plan to increase the supply of clean and local energy, improve energy efficiency, create jobs, and boost the economic competitiveness of the Appalachian region.<sup>31</sup> At the same time, the ARC created the Energy Advisory Council (EAC) as a standing commit-

tee to involve representatives from all 13 Appalachian states in identifying energy strategies for Appalachia.<sup>32</sup> Although the ARC’s strategy identified renewable energy development as a key funding priority,<sup>33</sup> little financing has since been channelled to renewable energy activities to date, primarily because the natural gas boom largely derailed the state’s shift away from fossil fuels.<sup>34</sup>

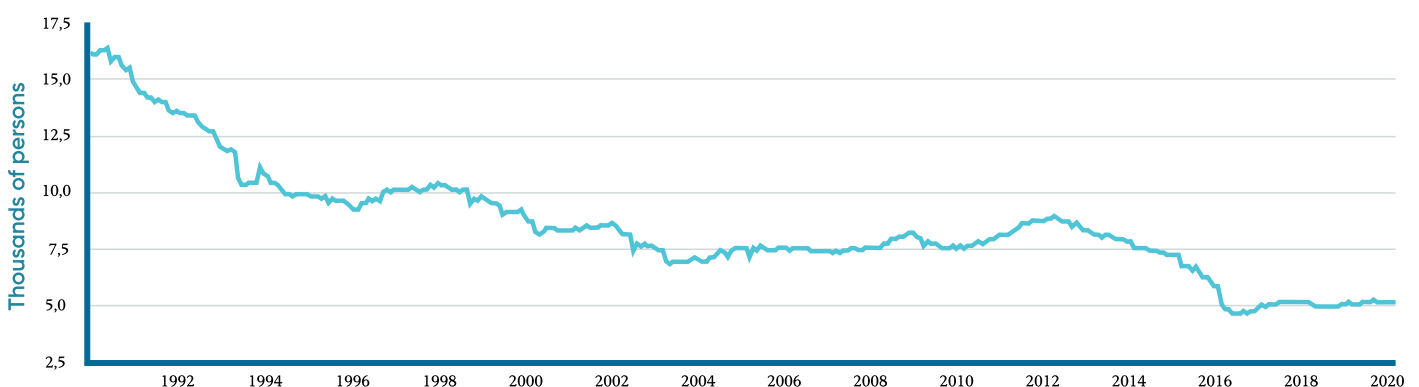
Over the past 10 years, Pennsylvania’s natural gas output has grown exponentially. Within that same period, 14 of the state’s coal power plants have closed.<sup>35</sup> The loss of employment income has lowered local tax revenue, reducing the resources available to fund public schools in the area; as a result, the level of education in Appalachia – already lagging behind that of the nation as a whole – has declined. This limits the ability of Appalachian residents to move into high-skilled occupations and, for companies seeking a well-educated workforce, lessens the appeal of business development in the area.<sup>36</sup>

In order to bolster employment opportunities and tax revenue available to coal communities, Pennsylvania’s Department of Community and Economic Development has developed promotional playbooks outlining the characteristics of former coal mines and coal-fired power plants and providing suggestions for redevelopment.<sup>37</sup> The West Suscon Project, located in northwestern Pennsylvania, demonstrates the employment potential of reclaimed mine sites: the commerce centre and trade park businesses created 1,700 jobs.<sup>38</sup>

In 2017, Pittsburgh Mayor Bill Peduto released plans for major investments in renewable energy infrastructure,<sup>39</sup> including programmes that would provide a ‘just transition’ for former coal miners, as part of a holistic approach to climate change mitigation.<sup>40</sup> He also signed an executive order pledging that Pittsburgh would continue to adhere to the Paris Accord guidelines even after US withdrawal.<sup>41</sup> In 2018, former New York mayor and philanthropist Michael Bloomberg awarded Pittsburgh \$2.5

million (€2.3 million) to finance the implementation of its ambitious climate change objectives.<sup>42</sup>

As of April 2019, the ARC had awarded funds to 22 projects in Pennsylvania for initiatives that stimulate economic growth in underserved Appalachian communities.<sup>43</sup> One of the most successful ARC-funded reclamation projects in Pennsylvania is the Anthracite Outdoor Adventure Area (AOAA), a massive park for off-road vehicles on a former mine site Coal Township, PA.<sup>44</sup> In Southwestern Pennsylvania, the ARC has financed projects for broadband infrastructure development, mine reclamation, and retraining programmes for former coal miners entering the natural gas industry.<sup>45</sup> The RECLAIM Act of 2019, a bipartisan bill co-sponsored by Pennsylvania’s federal representatives, would finance reclamation projects in coal-dependent areas throughout Appalachia.<sup>46</sup>



Federal Reserve Bank of St. Louis and U.S. Bureau of Labor Statistics.

# Best practices for a just transition

The Institute for Climate Protection, Energy and Mobility (IKEM) is currently researching transition processes in coal-intensive regions around the world to develop a roadmap for the energy transition in eastern Germany and a toolbox with best practices to promote a just transition in coal-intensive regions. Insights from a broad range of stakeholders are crucial to our research in case study regions, which include Nord-Pas de-Calais, France; Western Macedonia, Greece; Southwestern Pennsylvania and Colorado, USA; and Lusatia, Germany. This ‘Just Transition Study’ is part of the broader WindNODE project and is sponsored by the German Ministry for Economic Affairs and Energy (BMWi) through the programme ‘SINTEG – Smart Energy Showcases’.

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## Stakeholders contact:

**Kate Miller**

*Institute for Climate Protection, Energy and Mobility (IKEM)*

kate.miller@ikem.de

## Study contact:

**Sabrina Heinecke**

*Institute for Climate Protection, Energy and Mobility (IKEM)*

sabrina.heinecke@ikem.de

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