

## Center Releases New Studies Analyzing Utility-Scale Solar Energy in Pennsylvania

The Center recently released two reports focusing on solar energy development. The first study, *Understanding and Addressing the Impact of Solar Development on Pennsylvania Farmland*, provided funding to a team led by researchers at The Pennsylvania State University. The researchers identified and analyzed the demonstrated and potential economic, social, and physical land-based impacts of utility-scale solar development on farmland, farming practices, and farming communities in Pennsylvania. Study authors conducted a literature review of the impacts and solar policies in Pennsylvania and other states; explored and analyzed case studies in four locations; and interviewed 40 individuals.



### Key Findings

#### Physical Land-Based Impacts

- A substantial percentage of utility-scale solar development is on farmland across the United States and in Pennsylvania, including some prime agricultural soils.
- Farming operations are temporarily displaced for the life of utility-scale solar projects unless agrivoltaics are included.
- Agrivoltaics are uncommon in Pennsylvania but are growing.
- Utility-scale solar farms, unlike warehouses and housing developments, have a relatively impermanent impact on farmland. Installed solar facilities have a useful life of 30 to 35 years. Note, however, that solar leases often total 50 years (20 to 25 years for the initial lease term, with an approximate 20- or 25-year extension option). For a solar farm to last more than approximately 30 years, “repowering” (placing new panels on the existing racks) is required (Sorenson et al., 2022, p. 3).
- Solar sites may remain as energy facilities at the end of

their useful lives because they have obtained valuable regulatory approval for electric grid interconnection at the sites. They may be repowered (replaced with new solar panels) or converted to another type of electric facility.

- The equipment at solar sites may not be fully removed, and sites may not be returned to farmland conditions or conditions amenable to transforming the sites back to farmland. This is particularly a risk where local governments have not taken measures at the beginning of solar projects to ensure that solar developers post some sort of financial security—funds that are available in the event the facility is not properly “decommissioned” (removal of equipment and restoration of land).

#### Economic Impacts

- Crop and livestock production declines unless agrivoltaics are included in solar projects. Impacts on state and national agricultural production are minimal, but local impacts can be more substantial.
- Solar development displaces land that could otherwise be available for farmers who rent land; many development pressures (including housing in addition to solar) are likely to contribute to higher leasing costs.
- Solar development generates lease revenue for farmers. Current lease rates paid in some regions of PA for utility-scale solar range from approximately \$800 to \$2,200/acre annually, with a typical 2% annual inflation escalator built into the 20- to 30-year lease. This escalator value has been increasing annually.
- Host townships/boroughs and counties receive increased revenue from the payment of roll-back taxes under the Clean and Green preferential tax assessment program.

#### Impacts on Communities and the State

- Host townships/boroughs, counties, and school districts may receive increased revenue from the higher

*The summary continues on page 3.*

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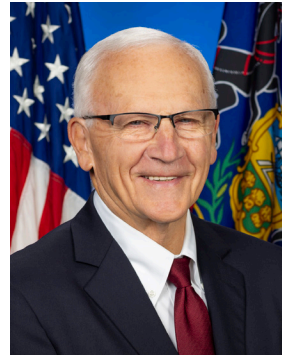
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## Chairman's Message



As Chairman of the Center for Rural Pennsylvania Board of Directors, I am pleased to share with you the latest edition of the Center's newsletter with important rural updates.

The Center recently convened at the State Capitol Building in Harrisburg for its quarterly Board meeting. This session was particularly noteworthy as we officially welcomed our newest Board member, Dr. Jeffrey Hyde, Associate Dean at Penn State College of Agricultural Sciences and Director of Penn State Extension. Dr. Hyde brings a wealth of

experience and knowledge that will significantly enhance the Center's work and mission to promote the resilience of rural Pennsylvania.

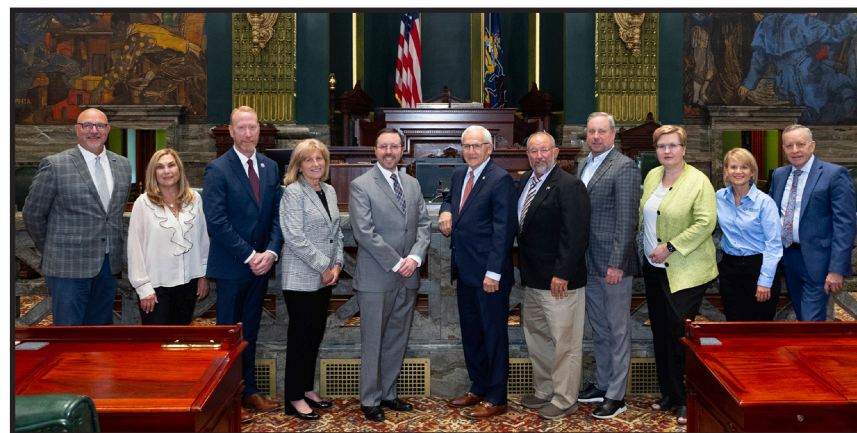
During the meeting, we discussed several ongoing Center initiatives, including our October 16 opioid hearing at Kutztown University in Berks County. This event marks the Center's 20th opioid hearing and coincides with a decade of our efforts to address the opioid crisis in the Commonwealth.

Over the years, these hearings have provided a vital platform for community members, experts, and advocates to share insights, helping to inform the General Assembly about the urgent challenges posed by opioid misuse and substance use disorders in Pennsylvania. The Center remains dedicated to providing a platform for dialogue and actionable solutions surrounding this public health emergency.

This edition of our newsletter features the Center's recent research initiatives, including two reports analyzing the potential for and implications of utility-scale solar energy in Pennsylvania. Additionally, we present findings from an economic impact analysis on the horticulture industry in Pennsylvania, an analysis of Pennsylvania's future youth population, and facts on state voters.

Thank you for your continued support and partnership as we work together to empower rural communities throughout the Commonwealth. Together, we can make a meaningful impact and enhance the quality of life for all Pennsylvania residents.

### Senator Yaw



Pictured (L-R): Dr. Jeffrey Hyde, Board Member; Dr. Nancy Falvo, Board Secretary; Dr. Charles Patterson, Board Member; Senator Judy Schwank, Board Member; Dr. Kyle C. Kopko, Center Executive Director; Senator Gene Yaw, Board Chairman; PA State Rep. Dan Moul, Board Member; Steven Brame, Board Treasurer; Shannon Munro, Board Member; Susan Snelick, Board Member; Richard Esch, Board Member.

- property taxes paid by commercial solar projects compared to the property taxes paid by agricultural uses.
- In states with more developed utility-scale solar, there is no direct evidence of farming supply chain impacts from solar development, such as the closure of feed or equipment stores.
- Local governments in areas with concentrated solar activity may experience the temporary growth of local industry, such as minor construction, land excavation, hospitality, and some routine maintenance jobs.
- There is currently no solar manufacturing in Pennsylvania; other states, such as North Carolina, have experienced positive solar supply chain impacts associated with expansive utility-scale solar development. Pennsylvania is unlikely to host solar manufacturing or battery manufacturing; other countries dominate this area, and the smaller amount of US manufacturing is concentrated in a limited number of states.

### Social Impacts

- Farmers may use the income from solar leasing to retire, in which case farming is unlikely to recommence following the end of the solar facility's useful life. In other cases, farmers use the income to support farming on the non-solar portions of their land, including expanding operations through renting or purchasing additional land.
- Due to the older median age of Pennsylvania farmers, some farmers losing land to solar leasing are choosing to downsize instead of finding replacement acres for those lost to solar development.
- Sense of place: The predominant concern of residents near proposed utility-scale solar development on farmland is aesthetic impact. Many residents believe that solar energy development will affect the rural character of the area in which they live.
- Some landowner-farmers believe that residents concerned about preserving viewsheds should pay for that preservation. These farmers focus on property rights and the burden of forgone solar leasing (and income).
- Controversy surrounding proposed solar developments causes social rifts within communities and makes residents, farmers, and business owners fearful to engage in public discussion regarding proposed solar facilities, at least in the short term.

The second study, completed by a team of researchers at Shippensburg University of Pennsylvania, is titled, *Baseline Assessment, Development Process, and Regulatory Context of Solar Power in Rural Pennsylvania*. The project included a geographic analysis of existing and proposed solar development to date, in order to determine the factors that contribute to the current distribution of solar development and that make certain regions most likely to see development in the future.

To carry out this analysis, the researchers compiled a database of environmental and socio-economic factors found to be important to the siting of utility-scale solar energy by government agencies, research scientists, and the solar industry. They utilized geographic information systems (GIS) to identify factors favored by solar development in Pennsylvania and develop a weighted model that identifies regions most likely to see solar development pressure in the coming years. This analysis found that, to date, utility-scale solar favors agricultural land that is near population centers and

transmission infrastructure, with relatively lower property values compared to neighboring parcels. Second, the researchers conducted a comparative solar policy audit for Pennsylvania with New York and North Carolina, two similar states with significantly higher rates of solar development. This process involved cataloging and reviewing all state-level policies relating to solar energy in each state, as well as state offices and agencies specifically tasked with managing solar energy development. The analysis found that these three states have a gradient of state-level solar policy, with New York having the most initiatives and Pennsylvania having relatively few. While New York has far more policy and state offices addressing solar energy than North Carolina, the study found that both states have robust renewable energy portfolio standards and policies that streamline the interconnection process and ensure buyers for new solar energy projects.

Lastly, these researchers conducted semi-structured interviews with key stakeholders across Pennsylvania, including state, county, and local officials, solar developers, rural landowners, and academic experts with significant experience working with Pennsylvania landowners on solar energy development. This qualitative analysis was conducted to provide a better understanding of how the current process of utility-scale solar development is experienced by rural residents in the Commonwealth. Interview analysis indicated that there is great uncertainty surrounding the solar development process across all stakeholder groups. Participants expressed a strong desire for state-level guidance and support to help rural municipalities and communities better manage the solar development process. Interviews also indicated that there is significant rural support for solar energy development if guidelines are developed to ensure that rural interests are protected in the process.

### Key Findings

- Much of the territory of Pennsylvania is suitable for solar development, with numerous regions of the state likely to see concentrated development pressure in the coming years. Most operational utility-scale solar facilities in Pennsylvania are in the populous South-eastern region, and this trend is likely to continue, with spillover into adjacent rural counties.
- The tendency for utility-scale solar to favor land in closer proximity to population centers and infrastructure suggests that solar development will become one of numerous competing drivers of land use change, which could drive up the costs of development and ultimately make solar energy more expensive in Pennsylvania.
- Given that much of Pennsylvania is likely attractive to utility-scale solar development, it seems likely that state-level policy, or the lack thereof, helps explain the stark differences between the Commonwealth and the two other states included in this comparative policy analysis.
- The significant lag in the grid interconnection process is likely a significant factor in the low rate of solar buildout in Pennsylvania.
- The most common sentiment among county and local officials was that they lacked the resources or capacity to develop utility-scale ordinances on their own, or to efficiently handle the siting and permitting process.

Read the full reports at [www.rural.pa.gov](http://www.rural.pa.gov).

### Key Findings

The Center recently conducted an economic impact analysis on the Pennsylvania horticulture industry. Horticulture is part of the agricultural industry and is comprised of greenhouses, nurseries, flower cultivators, and other operations that grow nursery stock, flowers, or any crops that are grown under cover (i.e., in greenhouses). In 2022, data from the U.S. Census of Agriculture show that the horticulture industry in Pennsylvania sold just over \$1 billion in agricultural products, which was approximately 11 percent of all agricultural sales in Pennsylvania. In terms of sales, it is the fourth-largest agricultural industry in Pennsylvania, behind dairy (28 percent of sales), poultry and egg production (27 percent of sales), and oilseed and grain farming (11 percent of sales).

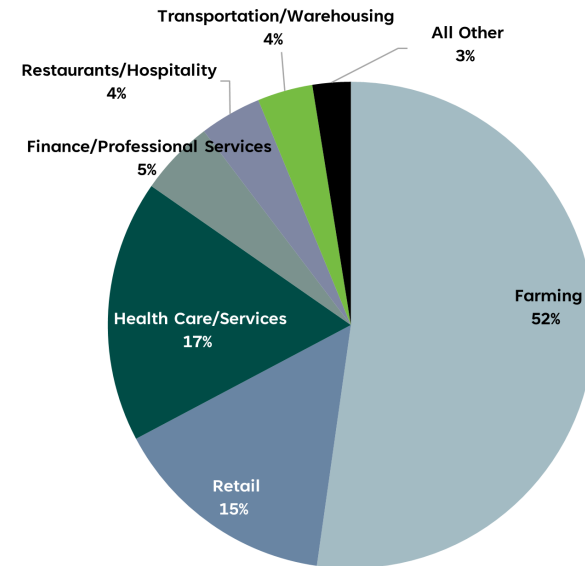
The full report is available on the Center's website at [www.rural.pa.gov](http://www.rural.pa.gov).

Data source: U.S. Department of Agriculture.

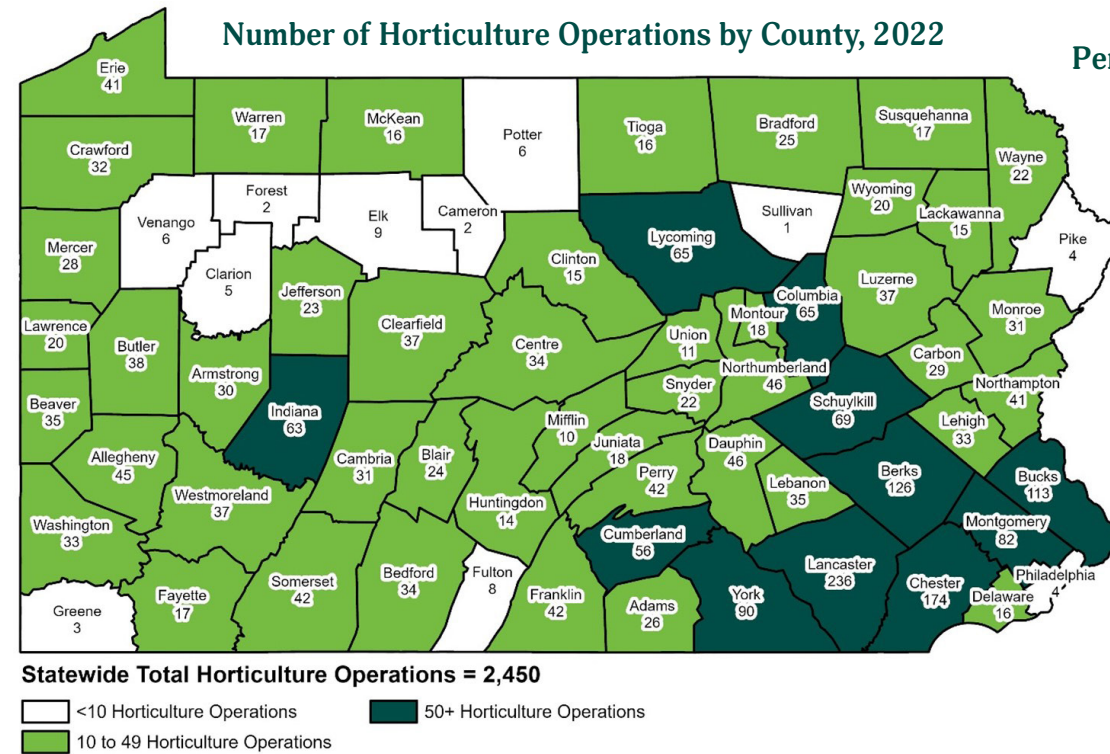
### Production Expenses for the Horticulture Industry in Pennsylvania, 2022

	Amount (\$M)	Percent
<b>All Production Expenses</b>	<b>\$847.9</b>	<b>100%</b>
Labor (Includes Contract Labor)	\$390.4	46%
Chemicals (Includes Fertilizer)	\$145.3	17%
Building and Land Maintenance	\$120.1	14%
Seeds, Plants, and Vines	\$92.0	11%
Transportation Expenses	\$38.4	5%
Other Expenses	\$61.6	7%

### Jobs Supported by Pennsylvania Horticulture by Industry, Operations Located in Rural Areas, 2022

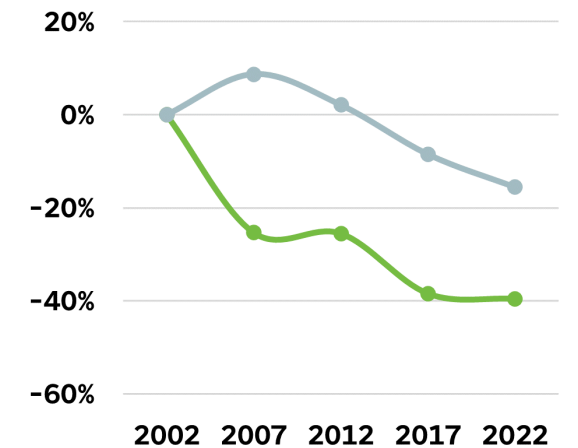


### Number of Horticulture Operations by County, 2022



### Percent Change Since 2002 in Total Sales, Number of Operations, and Average Annual Sales per Operation, Horticulture vs. All Pennsylvania Agriculture

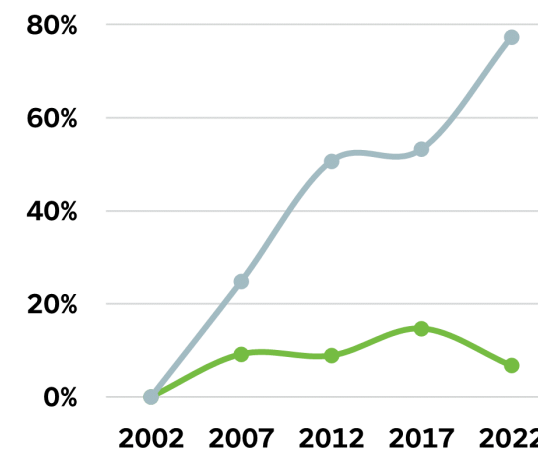
#### Number of Operations



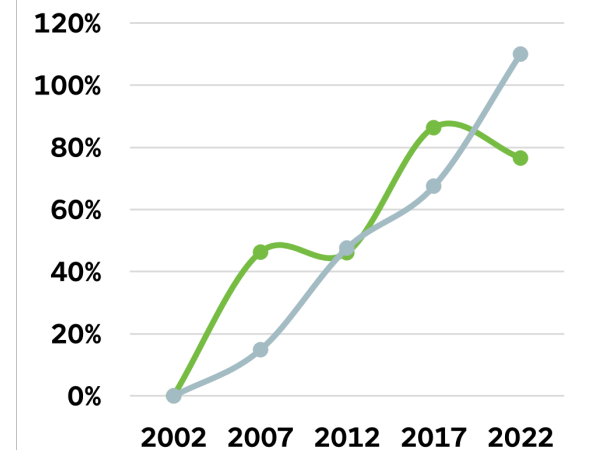
### Economic Impact of Pennsylvania's Horticulture Industry in 2024 Dollars, Operations Located in Rural vs. Urban Areas

	Direct	Indirect	Induced	Total Annual Impact
<b>Rural Pennsylvania</b>				
Total Economic Impact (\$M)	\$135.1	\$20.1	\$139.4	<b>\$294.5</b>
Jobs Supported	3,400	200	1,600	<b>5,200</b>
<b>Urban Pennsylvania</b>				
Total Economic Impact (\$M)	\$114.9	\$29.7	\$183.5	<b>\$328.1</b>
Jobs Supported	2,000	200	1,700	<b>3,900</b>

#### Total Sales



#### Average Sales per Operation



# Pennsylvania Population Projections 2050: Analysis of Future Youth

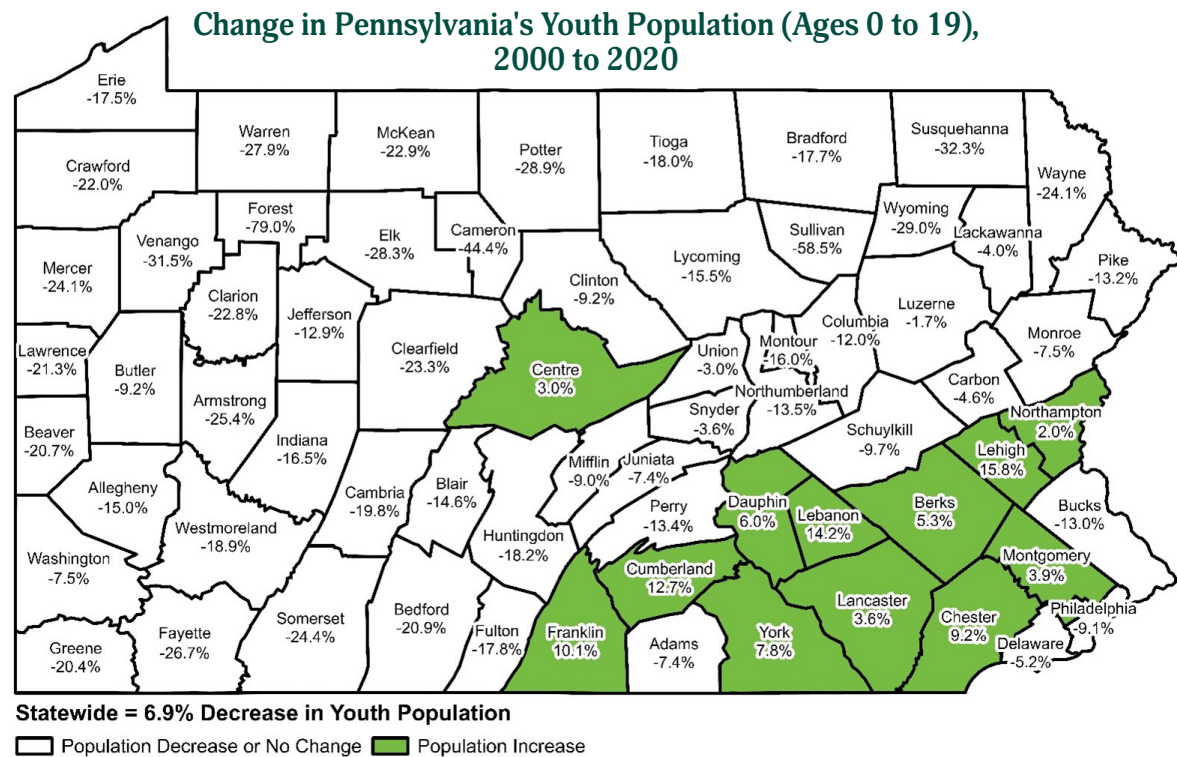
In 2023, the Center for Rural Pennsylvania partnered with the Pennsylvania State Data Center to release population projections by county through 2050. In addition to the aggregated total population for each county, the projections contained further details on the distribution of age cohorts. In 2020, 21 percent of Pennsylvania residents were 65 years old or older. By 2040, this number is projected to increase to 24 percent. The opposite effect is happening for the youngest age cohort (19 years old or younger). In 2020, 24 percent of Pennsylvania residents were under the age of 20, but by 2040, 21 percent will be under 20 years of age. One reason behind the smaller numbers of youth is a low fertility rate. Pennsylvania ranks 38th in the United States for total fertility rate, with a rate of 1.61 births per woman. Based on the population projections, Pennsylvania is expected to experience a steady decline in its youth population over the next 30 years, if contributing factors remain unchanged. The purpose of this fact sheet is to examine the current and future population trends of youth (ages 0 to 19) in Pennsylvania. These trends provide valuable insights into the

future of Pennsylvania's youth population, helping to inform a wide range of policy considerations.

## Key Findings

- Historically, the Commonwealth has experienced a decline in youth, which is projected to continue. In rural counties, there was a 34-percent decrease in the youth population from 1960 to 2020. In urban counties, there was a 22-percent decrease in the youth population from 1960 to 2020.
- The statewide youth population is expected to decrease further by 6.8 percent from 2020 to 2050.
- The age group that experienced the most notable change in population was the age 10 to 14 group; this cohort is projected to see a substantial decline over the next 30 years. The steepest decline (13.5 percent) will occur from 2020 to 2040.
- In rural counties, the youth population is expected to decline by 7.2 percent from 2020 to 2050.
- In urban areas, the youth population is expected to decline by 6.7 percent from 2020 to 2050.

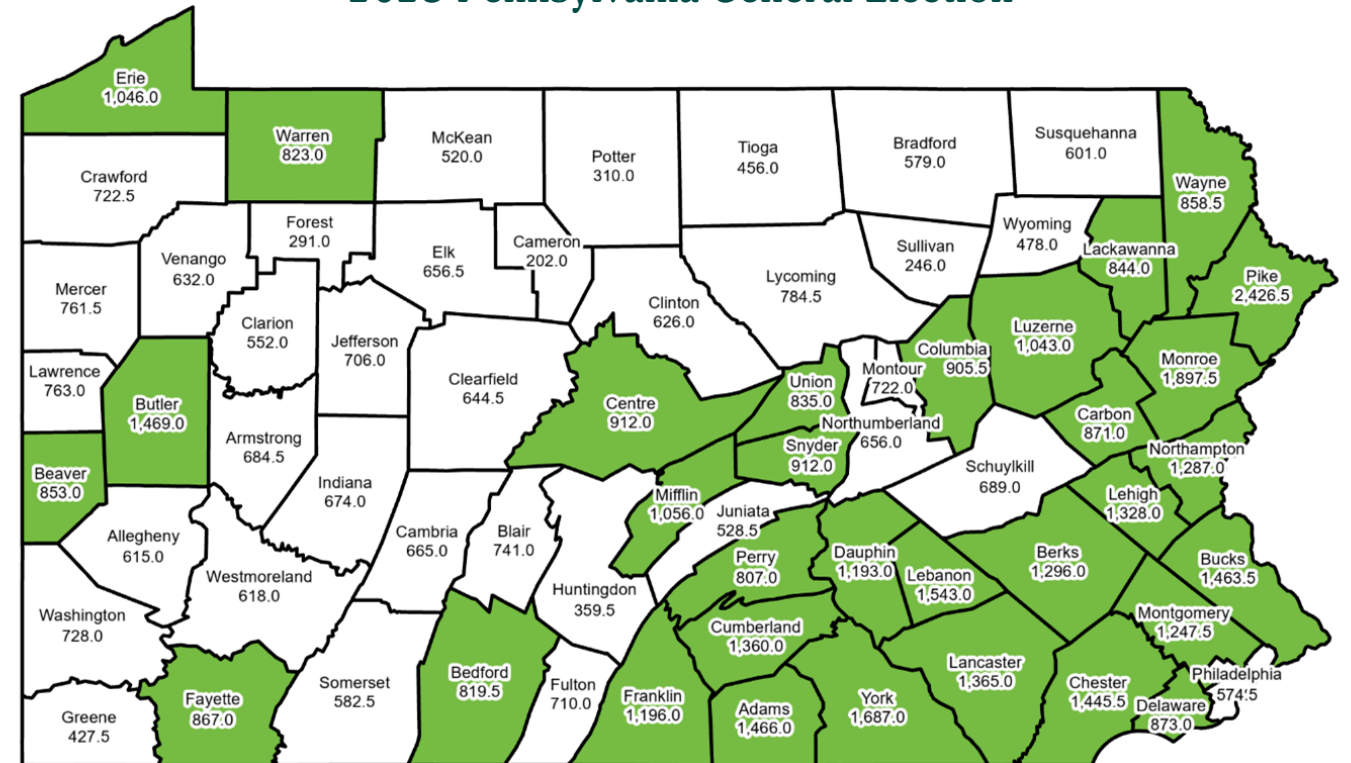
The full report is available at [www.rural.pa.gov](http://www.rural.pa.gov).



Data source: U.S. Census Bureau.

# JUST THE FACTS: PENNSYLVANIA VOTERS

## Median Voters per Precinct by County, 2023 Pennsylvania General Election



Median Voters/Precinct = 773

Below Statewide Median (White) | Above Statewide Median (Green)

Data source: Pennsylvania Department of State Bulk Election Data.

This November, Pennsylvania elections will receive more media attention than elections in most other states. However, the way that elections are conducted in Pennsylvania is particularly localized, so it can be hard to make generalized claims about the state as a whole. County governments decide the location and number of polling places available to voters on Election Day. In 2023, there were 9,189 polling places in Pennsylvania, with a median of 68 polling places in each county. The county with the highest number of polling places was Philadelphia County, with 1,704 precincts, and the lowest was Forest County, with 9 precincts. This is a wide range in the number of polling places, but when accounting for the number of registered voters, geography, and availability of mail-in ballots, the gap between counties makes more sense.

The map above depicts the median number of voters per precinct for each county, which highlights that counties in the Southeast tended to have more voters per precinct than counties in the rest of the Commonwealth. Among rural counties, the median voters per precinct was 740, while it was 1,280 for urban counties. Roughly a quarter (25 percent) of registered voters were registered in a rural county, while the rest (75 percent) were registered in an urban county, which generally corresponds with population. For the 2024 election, voter registrations are up roughly 3 percent statewide compared to 2023. Precinct-level data are not yet available for the 2024 primary election or the 2024 general election registration. However, there is typically very little fluctuation year-over-year in the number of precincts per county.



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## Resources

### Free Services for Farmers and Agricultural Businesses

The Penn State Law Rural Economic Development Clinic provides law students with practical legal experience in the food and agricultural sectors. Working under the close supervision of law faculty and staff attorneys who are licensed Pennsylvania attorneys, student attorneys can provide assistance to farmers and agricultural businesses in a variety of legal matters.

The Rural Economic Development Clinic is now accepting applications for its Fall 2024 semester. This semester, the clinic is looking to assist farmers and agricultural businesses with legal issues, including the following:

- Agricultural labor issues arising from children and youth working on-site;
- The provision of worker housing for agricultural laborers;
- Liability protection for agritourism operations;
- Compliance with the American with Disabilities Act in agritourism operations/accommoda-

tion of service animals;

- Solar leases;
- Carbon contracts; and
- Liability protection for farm or value-added products sold at farmers' markets or other direct sales outlets.

To take advantage of this opportunity, interested individuals and organizations should send an email to Ross Pifer at [rhp102@psu.edu](mailto:rhp102@psu.edu) providing a detailed explanation of the specific legal services desired along with appropriate background information. The Clinic may not be able to provide services to all who request them, but we will do our best to serve the greatest number of clients possible, consistent with our resources and the legal expertise of the student attorneys.

Any questions regarding the Rural Economic Development Clinic can be directed to Ross Pifer at [rhp102@psu.edu](mailto:rhp102@psu.edu). Learn more at [aglaw.psu.edu](http://aglaw.psu.edu).