Using GIS to Solve Economic Development Questions

A Case Study of Solar Farm Development and Sewer Capacity in Berks County

PRESENTED BY:

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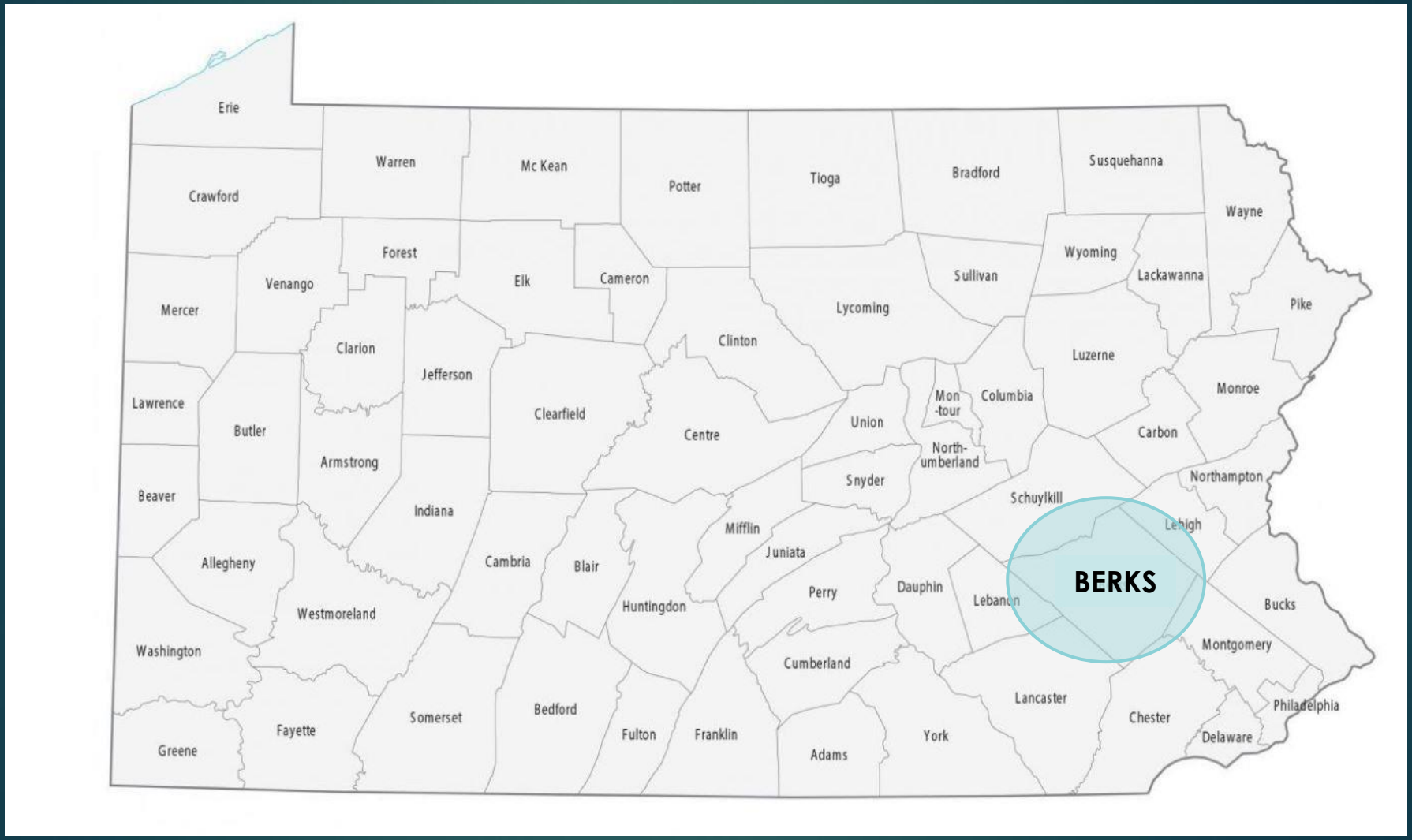
BCPC BERKS COUNTY Planning Commission

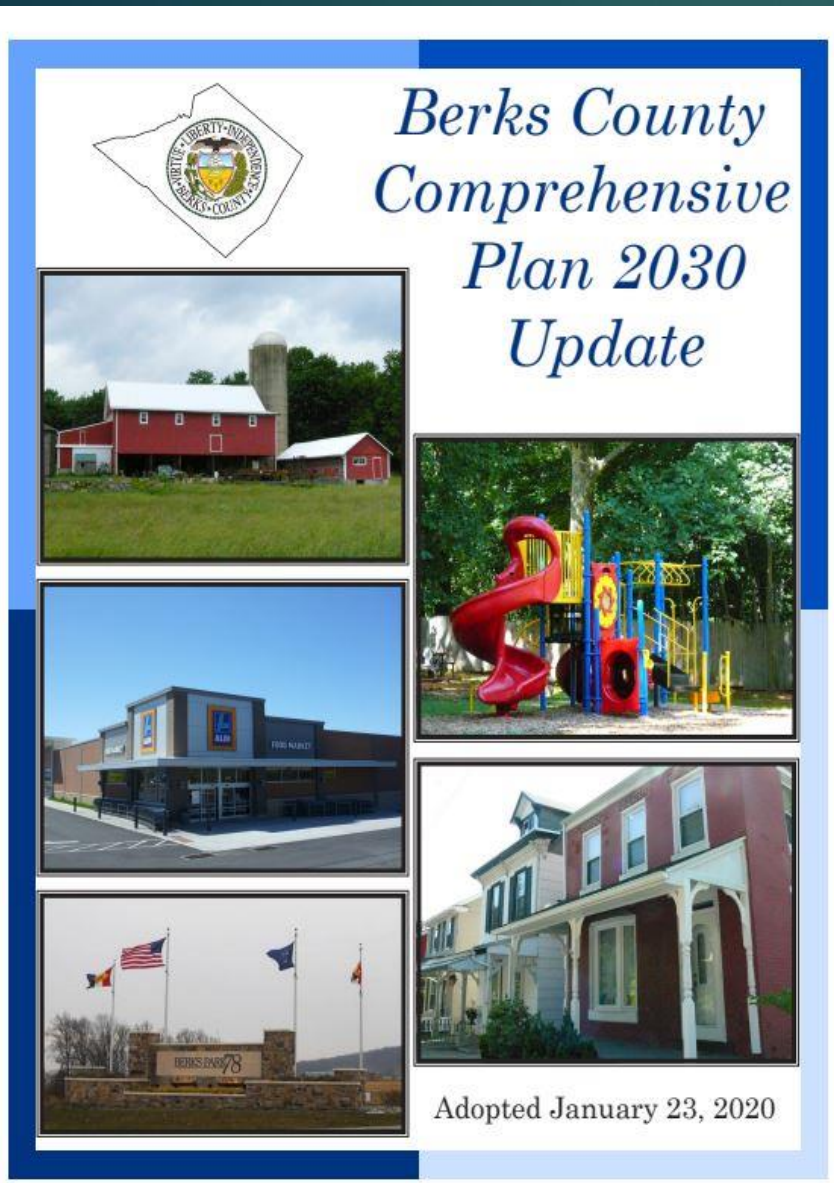
Objectives

- The importance of integrating GIS into Economic Development Decisions
- Creating a basis for Economic Development discussions with Municipalities and Elected Officials
- Utilizing GIS to identify the choices and opportunities in land use decision making

BERKS COUNTY Planning Commission

Berks County



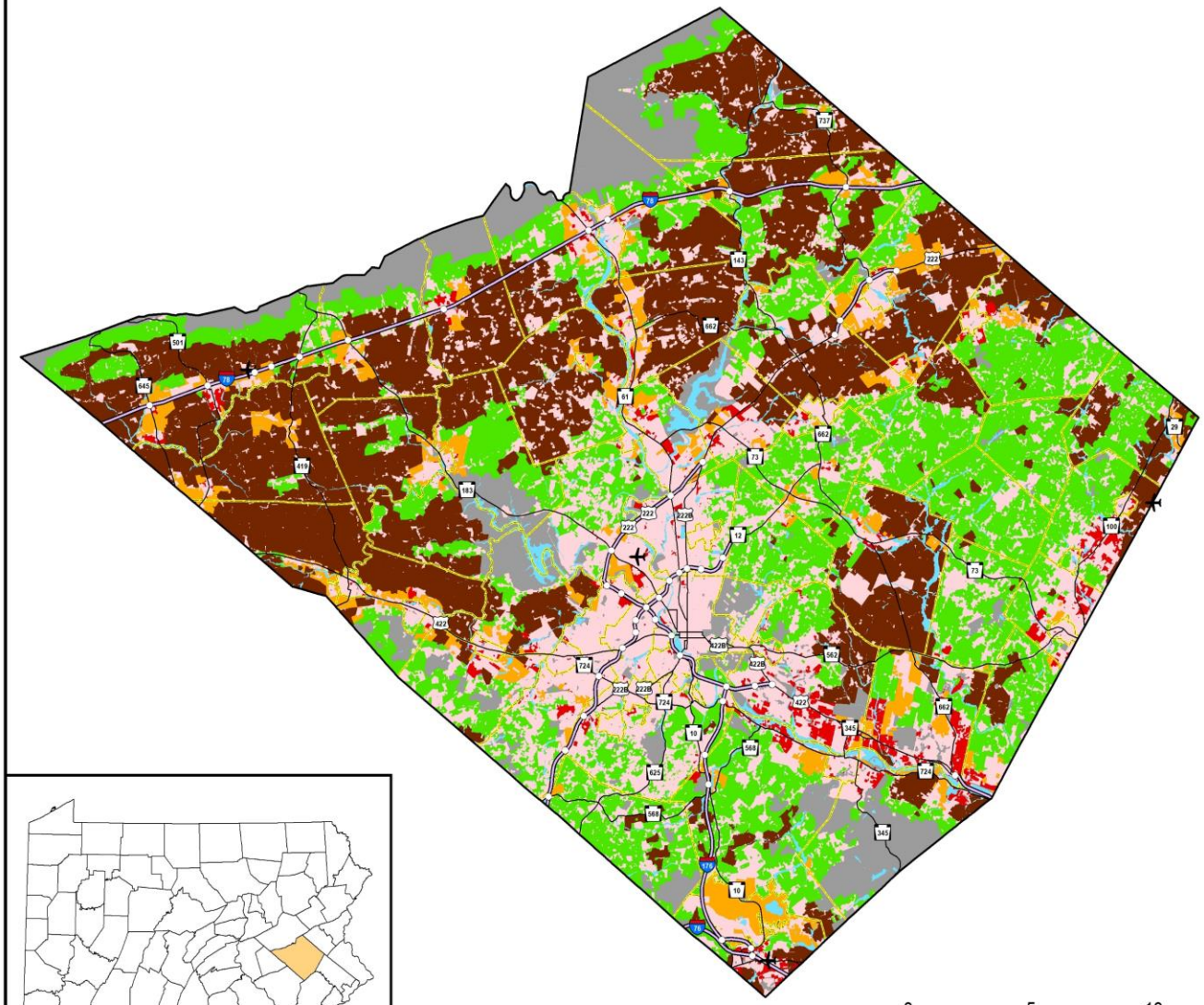


- Future Land Use
- Economic Development Areas
- Natural Resources
- Water and Sewer Service Areas

FIGURE 18

Berks County Comprehensive Plan Update
Adopted: January 23, 2020

Future Land Use
Berks County, Pennsylvania



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Legend

- Existing Development
- Designated Growth
- Future Growth
- Rural Conservation
- Agricultural Preservation
- Permanent Open Space and Rec
- Environmental Hazard
- Transportation Network
- Berks County Boundary
- Municipal Boundaries
- Limited Access Highway
- Major Roads
- Railroads
- Interchanges
- Public Airports

Source: Berks County Planning Commission, Berks County GIS, Berks County Mapping, Berks County Department of Emergency Services, FEMA

Published by the Berks County Planning Commission

BAB 1/20

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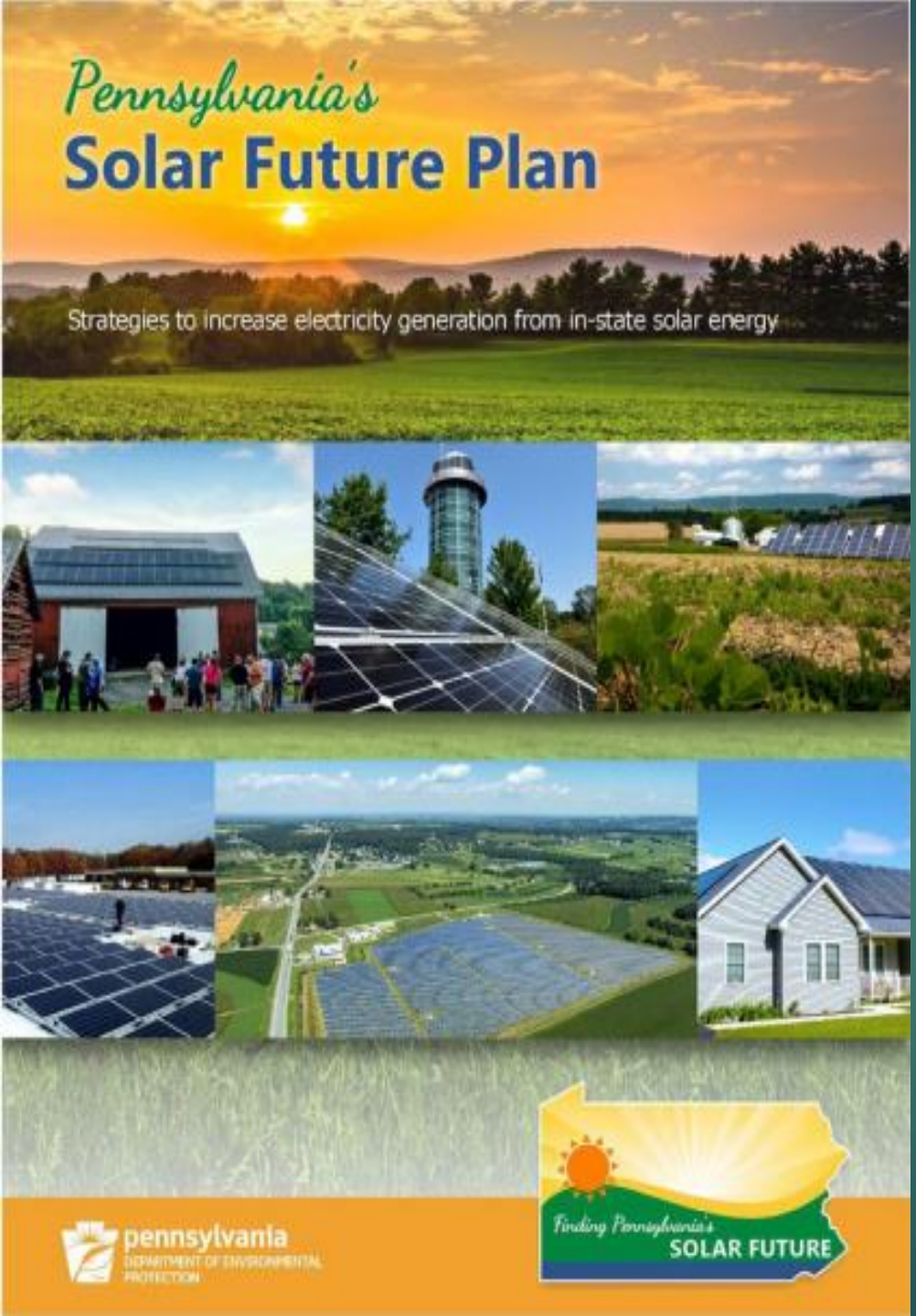
Solar Farm
Case Study

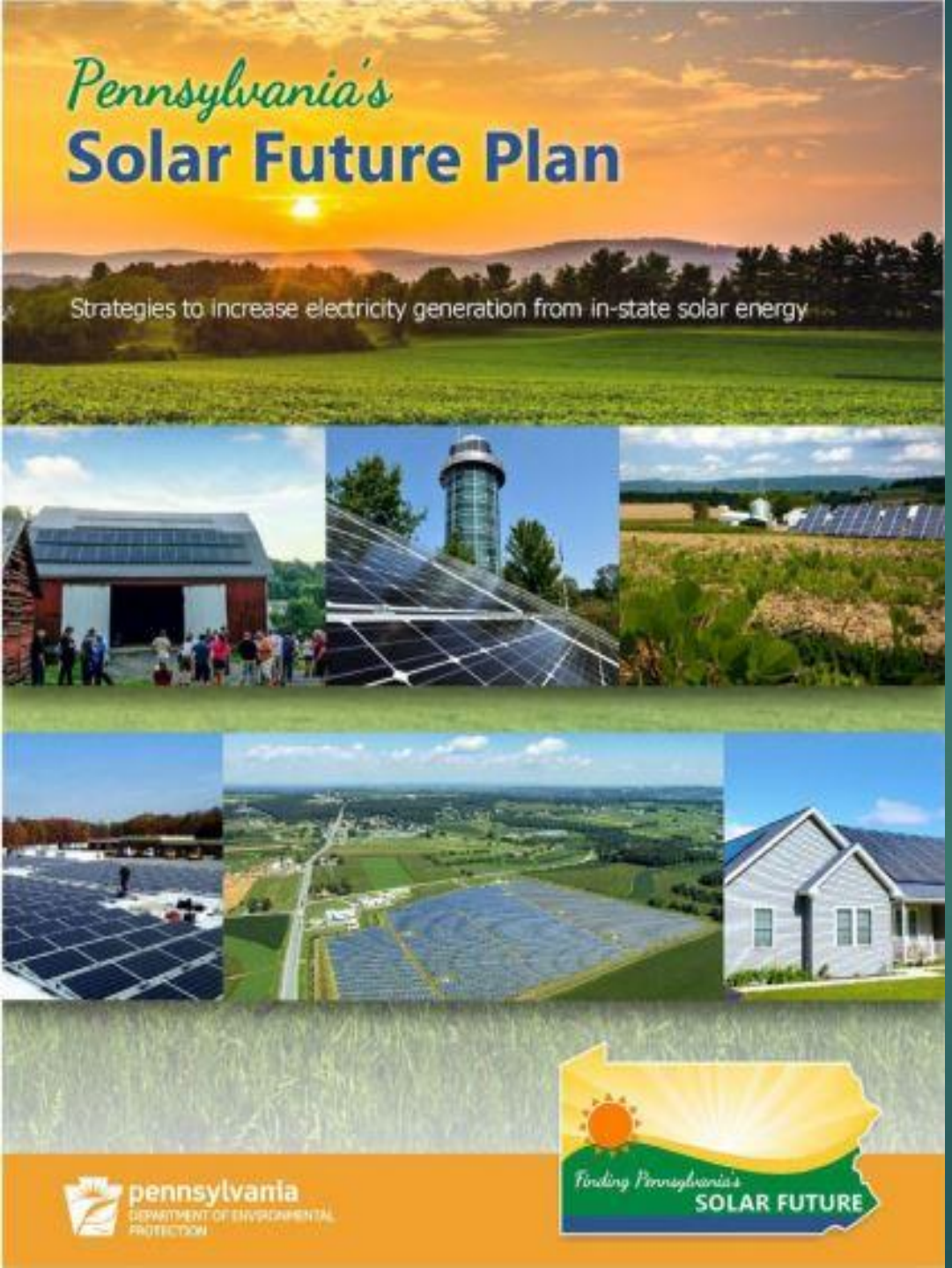
The Why?

- Solar Farm Developer Inquiries
- Concerns from the Agricultural Community
- Request for Zoning Regulation Changes
- Vulnerability of Developable Sites
- Impact on Economic Development



The Why?

- **PA DEP Solar Plan**
  - Stakeholders from across the state met in 2018 to "determine what solar energy can look like in 2030 if strategies are developed and implemented to increase this energy source."
  - Solar supplies **0.1%** of electricity that comes from renewable energy in PA
  - The goal of the Plan is **10% of Electricity** from In-State Solar by 2030



The Why?

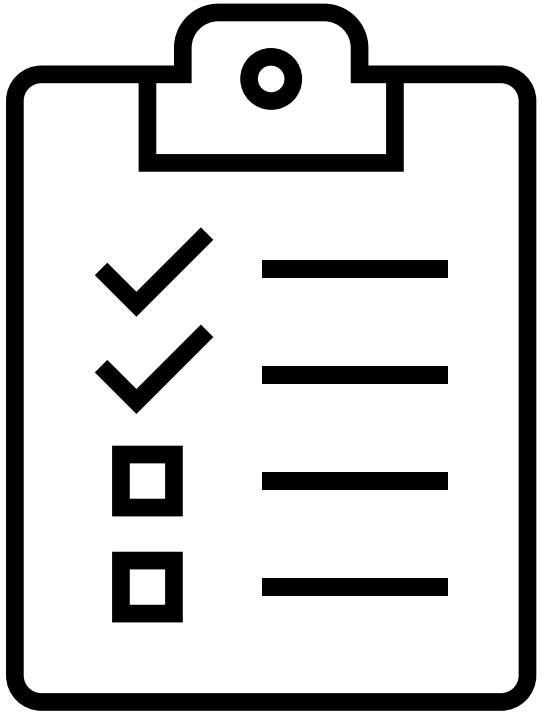
- **PA DEP Solar Plan**
  - The Plan recommends expansion of Grid-scale solar across the state, including "installing larger, grid-scale systems on buffer zones, disturbed lands and in conjunction with grazing or pollinator friendly perennials."

PA Climate Action Plan

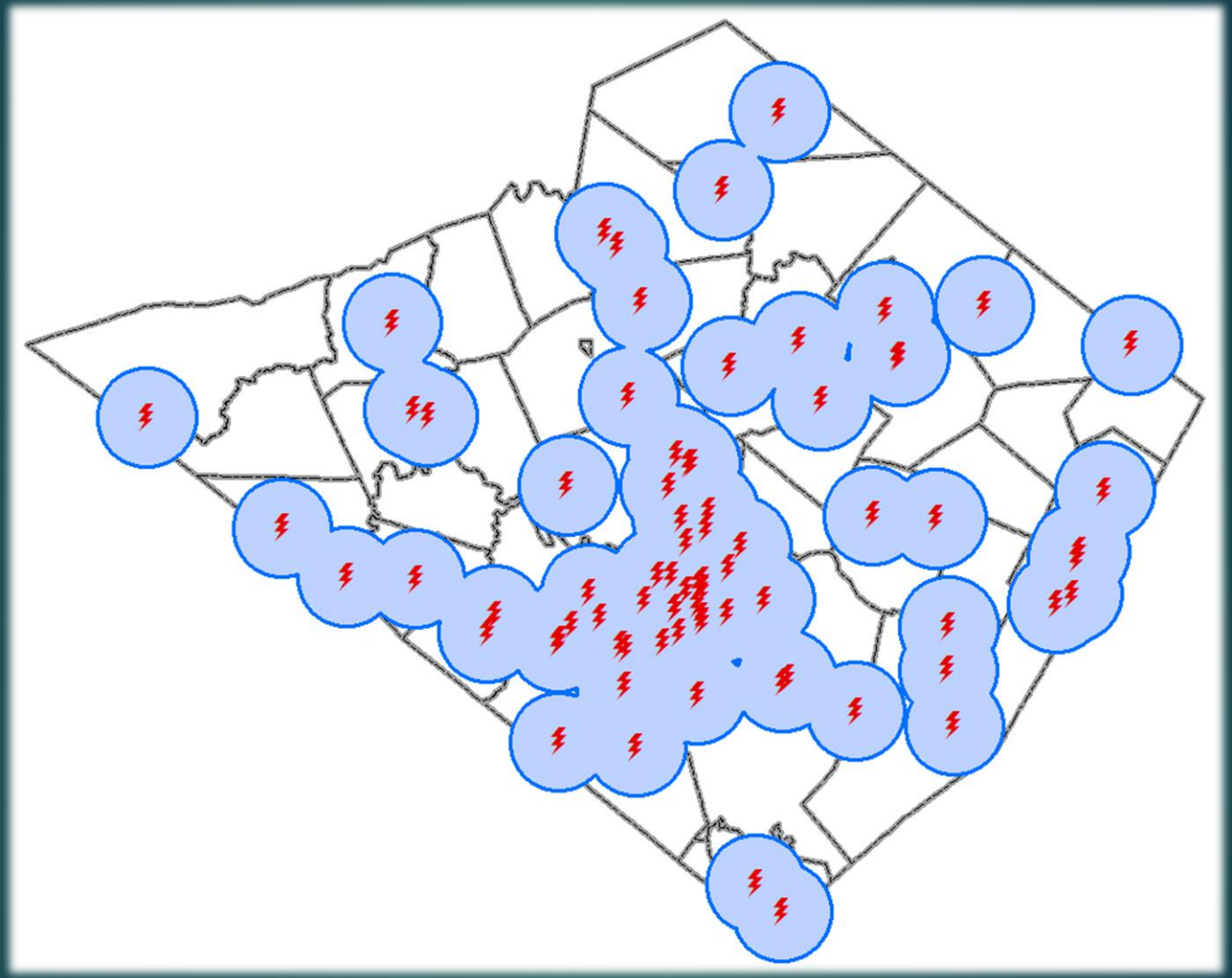
- Recommends an increased use of clean, distributed electricity generation resources.
- Create a diverse portfolio of clean, utility-scale electricity resources.

The How

- Created a GIS layer which used previously developed layers with various factors relating to site identification for solar development.
- What was not considered in this analysis: solar on existing structures.
- Only looked at undeveloped land.



Two-Mile Buffer of Substations



Land Eliminated from the Two-Mile Buffered Areas

Floodplains (1% and 0.5%)	Economic Development Areas
Agricultural Conservation Easements	Woodland
Conservation Easements	Slopes Greater than 8%
Prime Soils I-III	Existing Development- FLU 2030 Update
Parcels containing EV/HQ streams	Recreation- FLU 2030 Update
Building Footprints	Roads

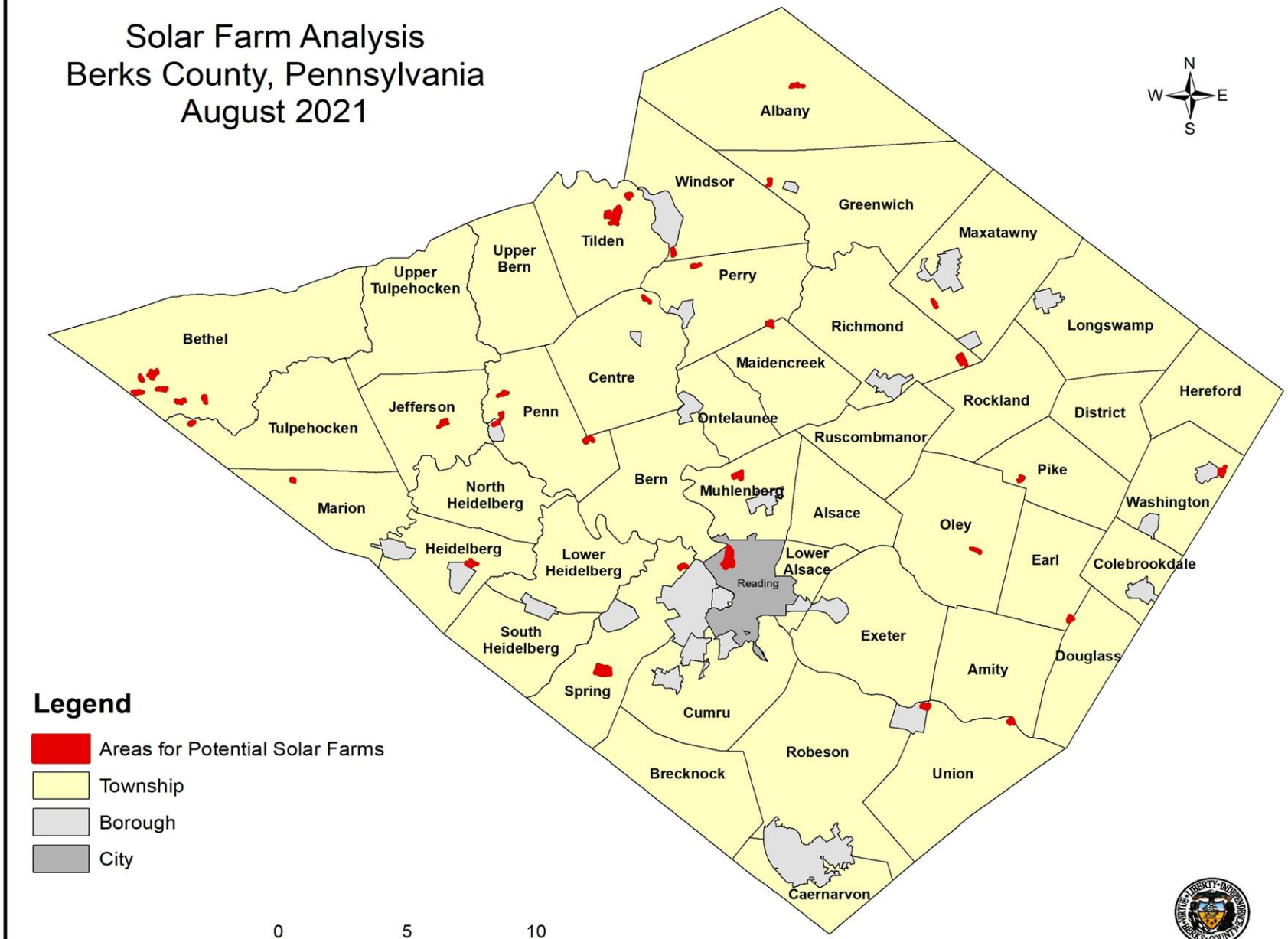
Additional Steps within the Two-Mile Buffered Areas

- Areas of land less than 10 acres were removed.
- Brownfields, Superfund and RCRA sites greater than 10 acres and within the substation 2-mile buffer were included.

2021 Analysis Results

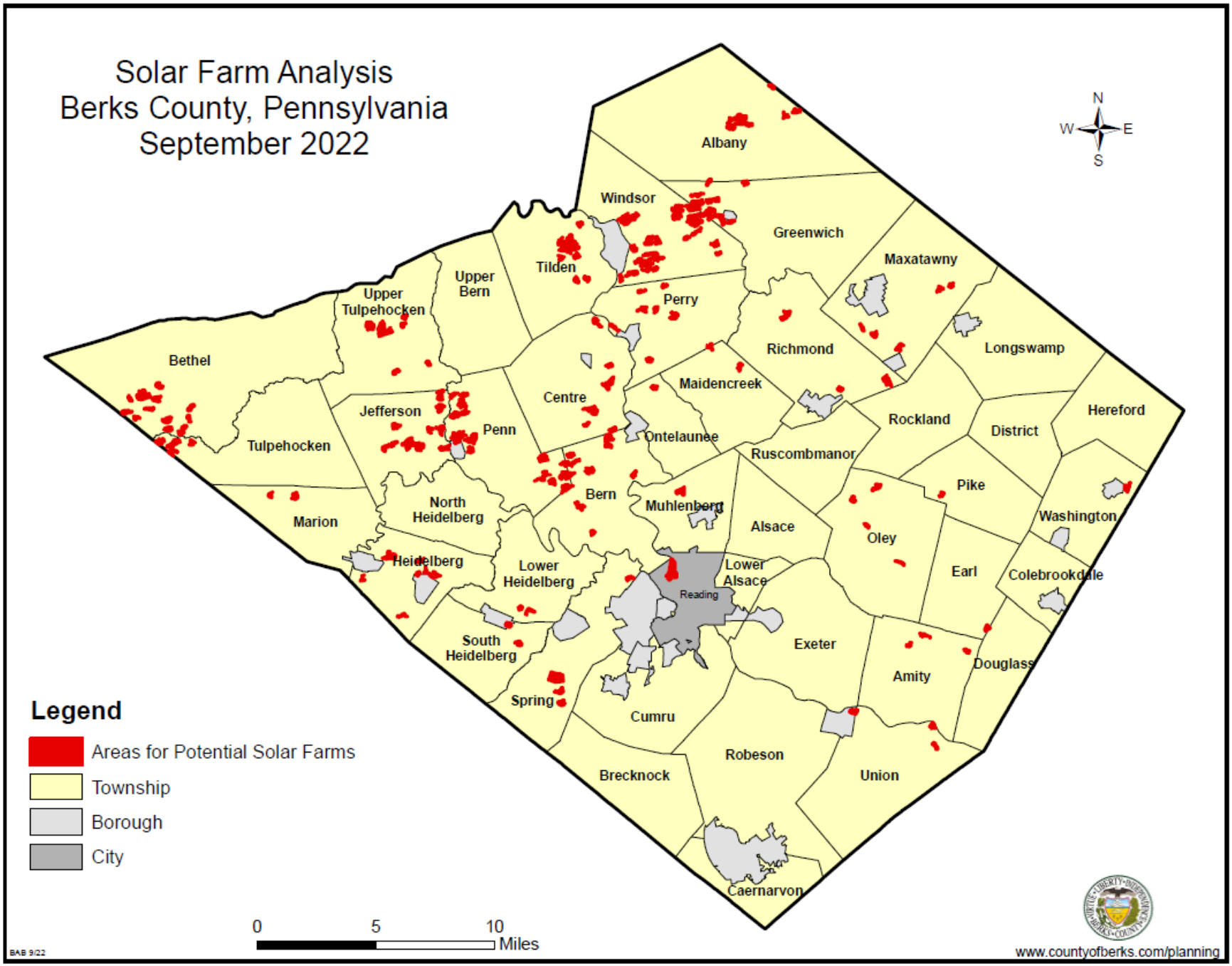
- There are **826 acres** available for potential solar farms in Berks County when Class I,II and III soils are excluded.
- These sites are scattered throughout the north central and western regions of the county.

Solar Farm Analysis
Berks County, Pennsylvania
August 2021



2022 Analysis Results

- There are **3,744 acres** available for potential solar farms in Berks County when only Class I and II soils are excluded.
- These sites are located predominately in the northern and northwestern regions of the County.


Solar Farm Analysis
Berks County, Pennsylvania
September 2022
N
W
E
S
Albany
Windsor
Greenwich
Maxatawny
Tilden
Upper Bern
Upper Tulpehocken
Perry
Richmond
Longswamp
Bethel
Maidencreek
Centre
Jefferson
Penn
Rockland
District
Hereford
Ontelaunee
Tulpehocken
Ruscombmanor
Pike
Bern
Muhlenberg
Washington
North Heidelberg
Alsace
Oley
Marion
Heidelberg
Lower Heidelberg
Lower Alsace
Earl
Colebrookdale
Reading
South Heidelberg
Exeter
Douglass
Amity
Spring
Cumru
Robeson
Brecknock
Union
Caernarvon
Legend
Areas for Potential Solar Farms
Township
Borough
City
0
5
10
Miles
BAB 9/22
www.countyofberks.com/planning

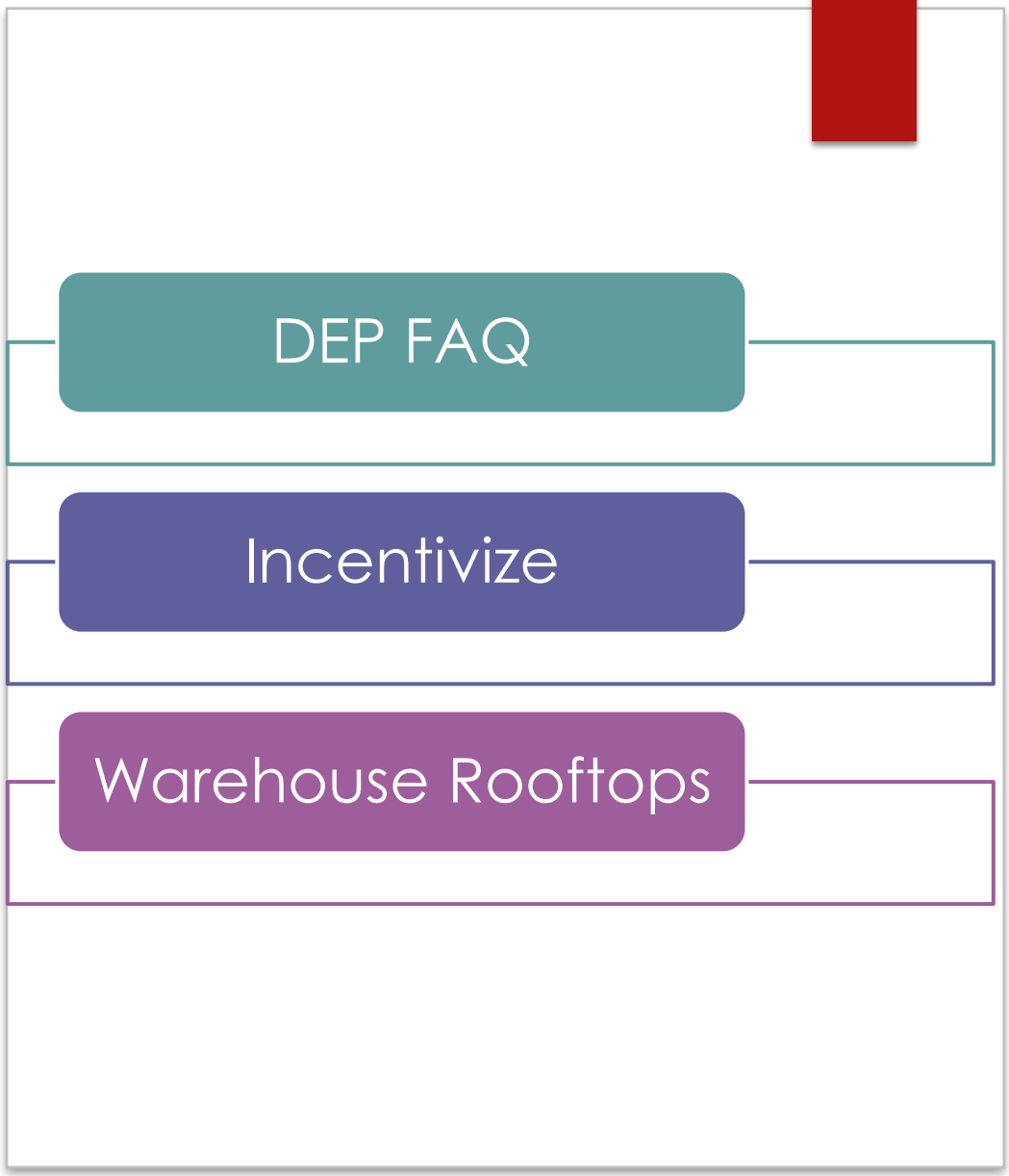
Conclusions

Based on the analysis the total available acreage for solar farms is 3,744. This is 6.2% of the total acreage in the county.

In regard to the goal of 10% solar grid energy in the state by 2030, Berks County's potential acreage would contribute 4.7%.

This percentage would increase if application on existing structures contributed.

Additional Considerations



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Clean Water

Chapter 102 Permitting for Solar Panel Farms

Frequently Asked Questions (FAQ)

January 2, 2019
Revised, April 30, 2021
Version 1.1

Background

With renewed interest in the development of clean, renewable energy in Pennsylvania, the development of solar photovoltaic installations is increasing in the state. Responsible development of solar farms must balance the growth of this valuable industry with the need to protect our natural resources, including addressing issues related to stormwater runoff. This FAQ document was developed to clarify the Department of Environmental Protection's (DEP's) interpretations concerning applicability and implementation of National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges associated with construction activities, including erosion and sediment control (E&S) and post-construction stormwater management (PCSM) for solar panel farms. This document provides recommended guidance for ground level solar projects with one acre or greater of earth disturbance.

Nothing in this document affects regulatory requirements. The interpretations herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the interpretations in this document that weight or deference. This document provides a framework within which DEP and delegated county conservation districts (CCDs) will exercise administrative discretion in the future. DEP reserves the discretion to deviate from the interpretations in this document if circumstances warrant.

For additional information on solar energy, visit DEP's website at:

http://www.dep.pa.gov/Citizens/Energy/Renewables/Pages/Solar.aspx.

FAQ #1: Is NPDES permit coverage required for the development of a solar panel farm?

If the earth disturbance associated with the construction of a solar panel farm, over the life of the project, will be 1 acre or greater, NPDES permit coverage is required pursuant to 25 Pa. Code § 102.5(a). Please refer to FAQ #2 for more information.

DEP FAQ Sheet

DEP FAQ Sheet

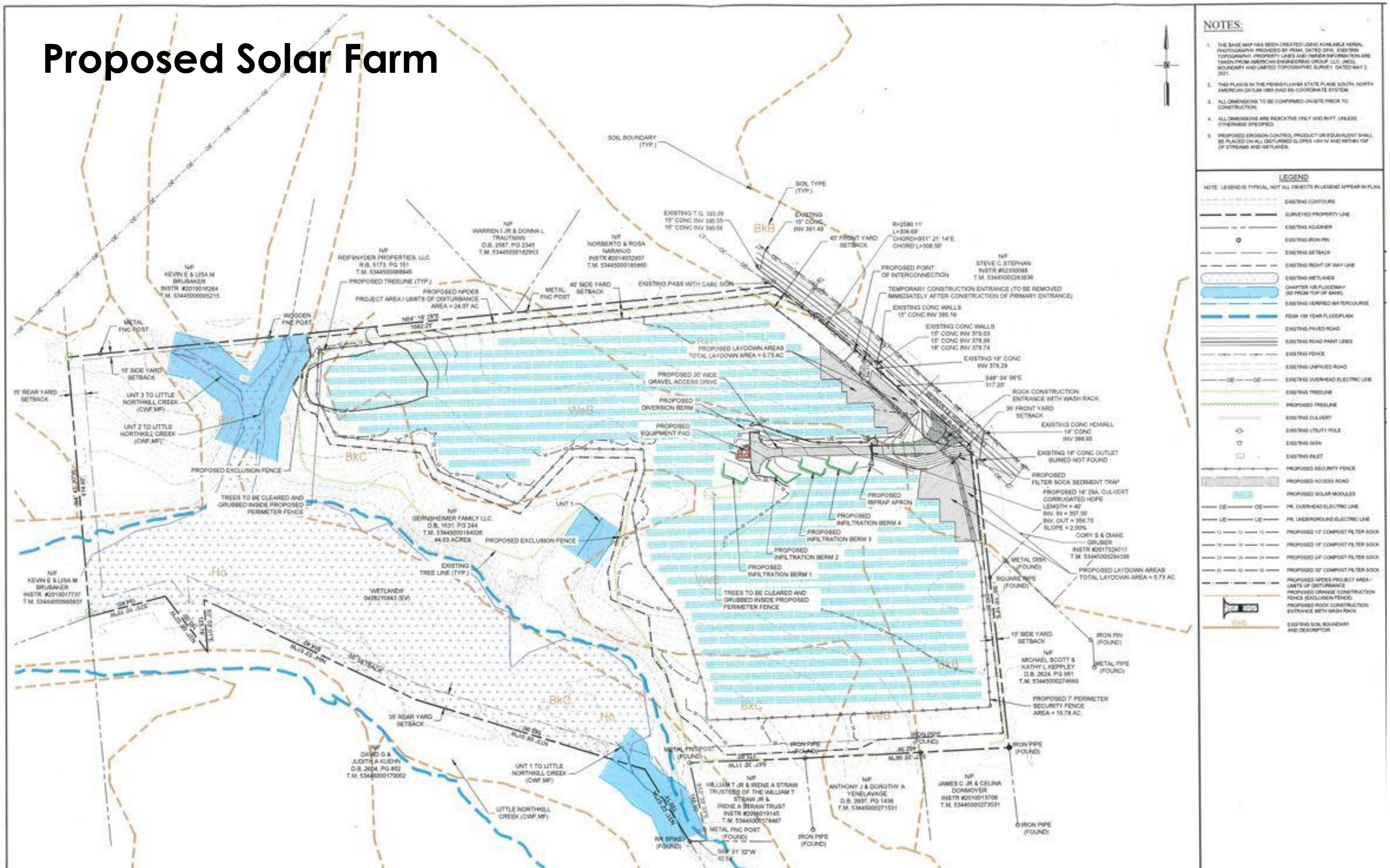
- **FAQ #11: The slope of my solar panel farm project is greater than 15%. Can the project be permitted? What additional BMPs or design considerations are necessary?**
- **FAQ #12: Can agricultural crops be grown underneath the solar panels?**

What Would You do?

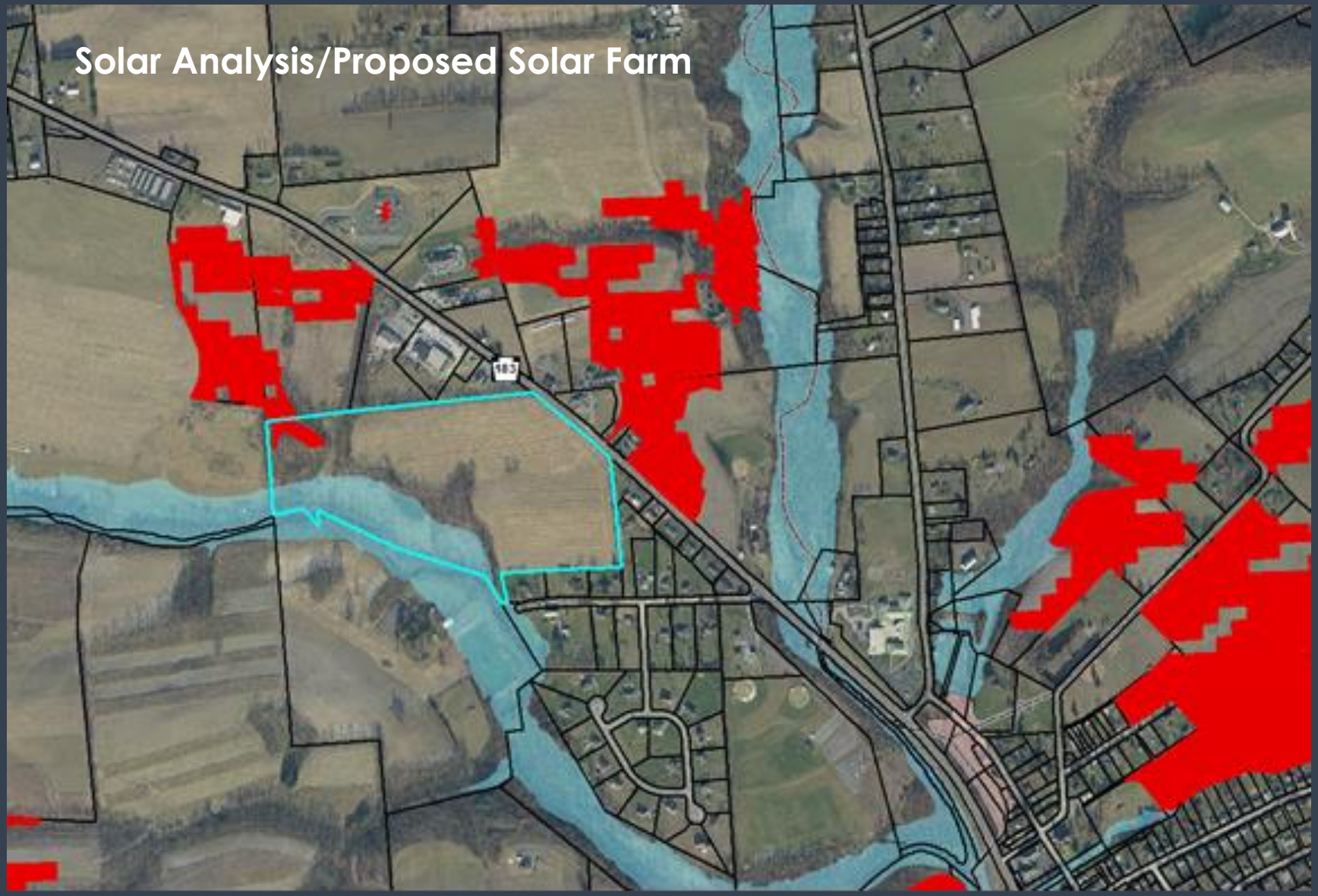
- Analysis of existing or potential roof top applications?
- Review of electrical infrastructure capacity?
- Analysis of economic benefits?
- Survey of resident interest?

Practical Application

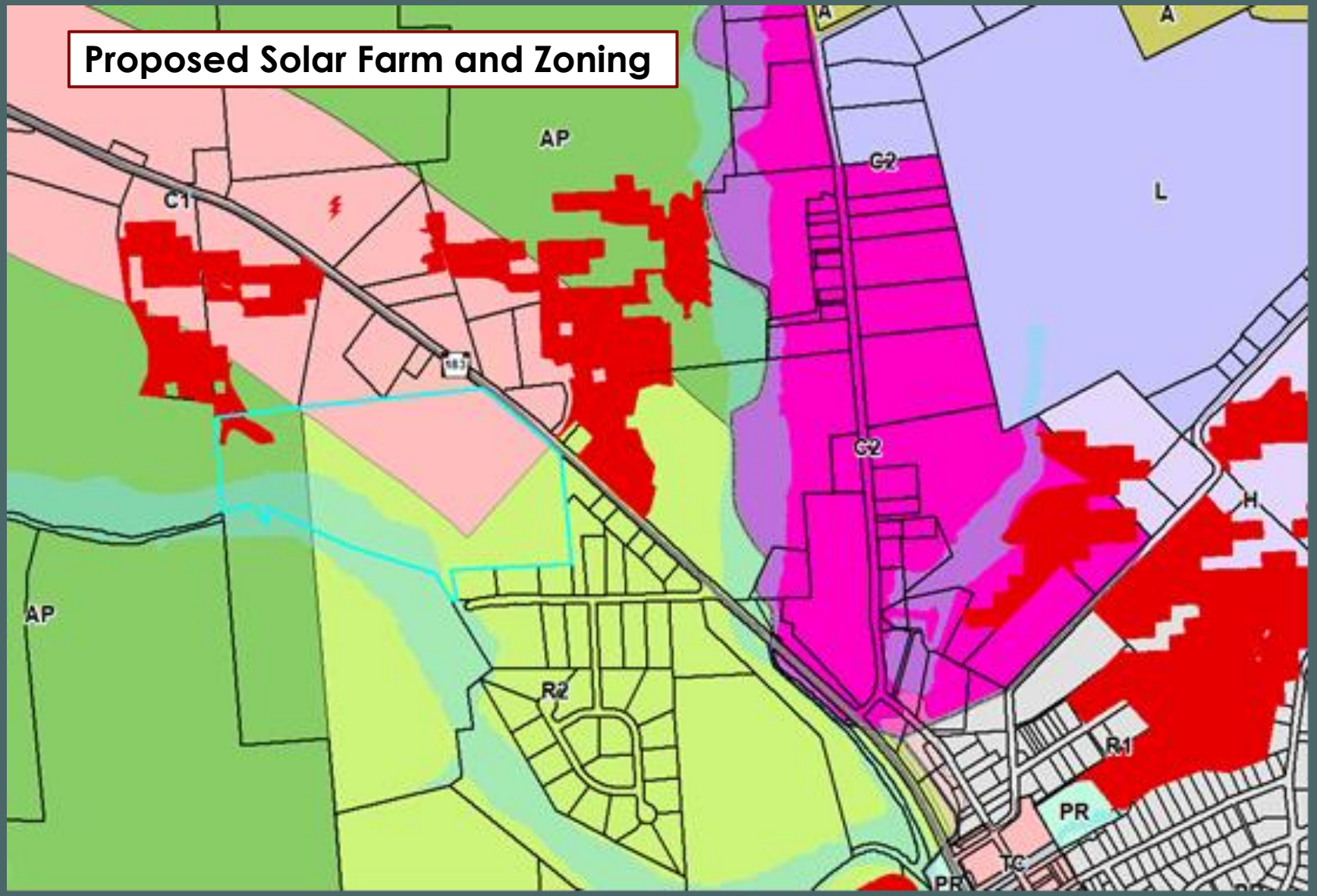
Proposed Solar Farm



Symbol	Soil Name	Cutbanks Cave	Corrosive to Concrete/Steel	Droughty	Easily Erodible	Flooding	Depth to Saturated Zone/ Seasonal High Water Table	Hydric/ Hydric Inclusions	Low Strength/ Landslide Prone	Slow Percolation	Piping	Poor Source of Topsoil	Frost Action	Shrink - Swell	Potential Sinkhole	Ponding	Wetness
BkB	Berks-Weikert complex, 3-8% slopes	X	C/S	X	X			X	X	X	X	X	X				
BkC	Berks-Weikert complex, 8-15% slopes	X	C/S	X	X			X	X	X	X	X	X				
WeB	Weikert-Berks complex, 3-8% slopes	X	C/S	X	X			X	X	X	X	X	X				

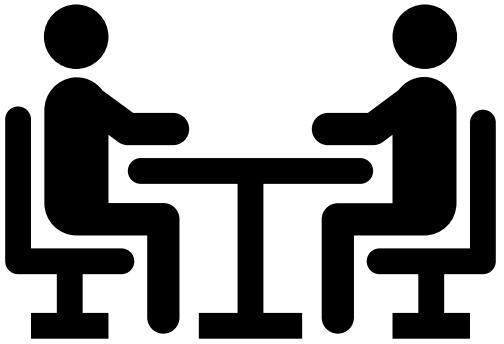

Solar Analysis/Proposed Solar Farm

Proposed Solar Farm and Zoning



Discussion Questions

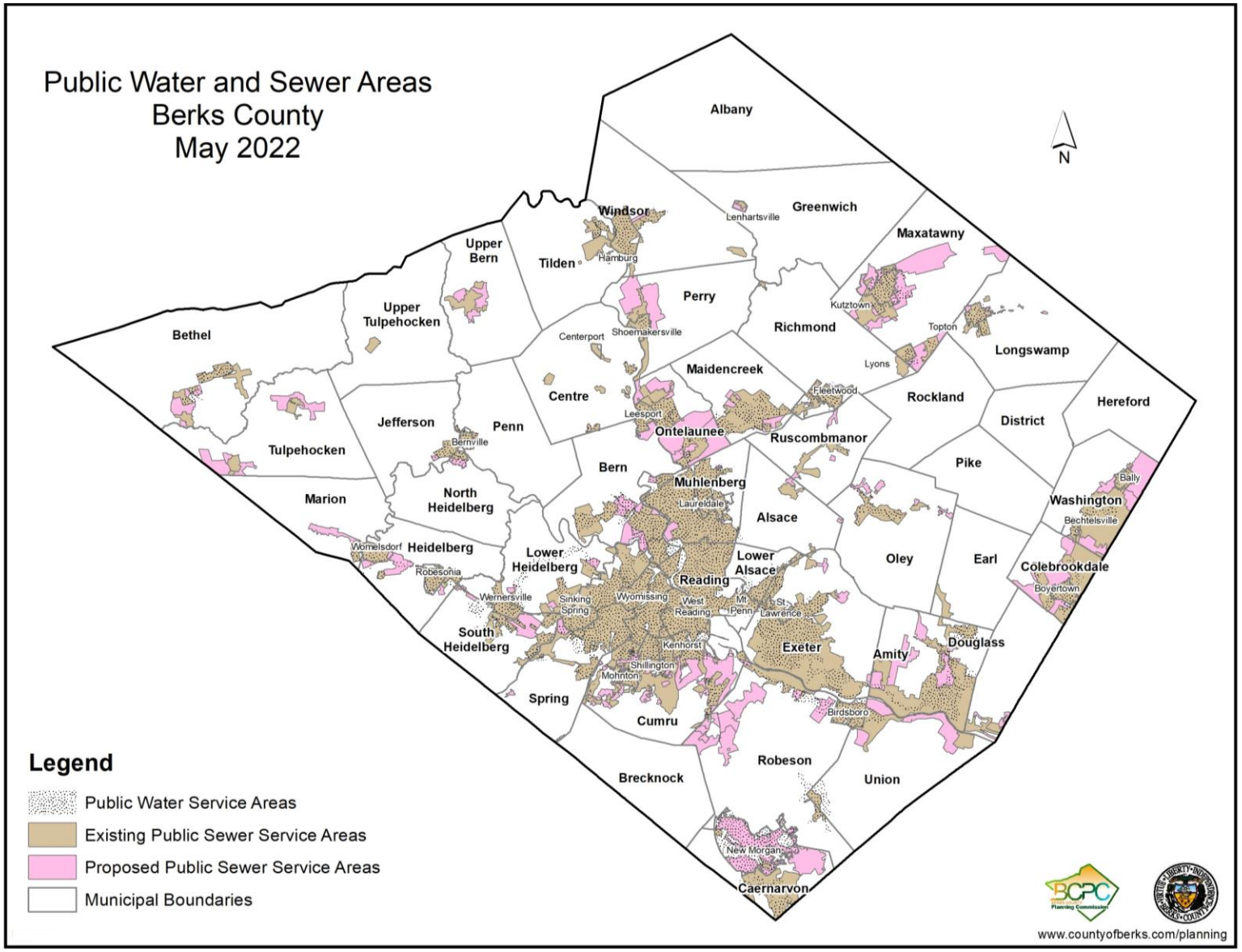
- What municipalities have Solar regulations?
- How have you responded to requests from Solar developers?
- What analysis factors did you use that weren't used in this case study?
- Have you encountered push back from local farmers?

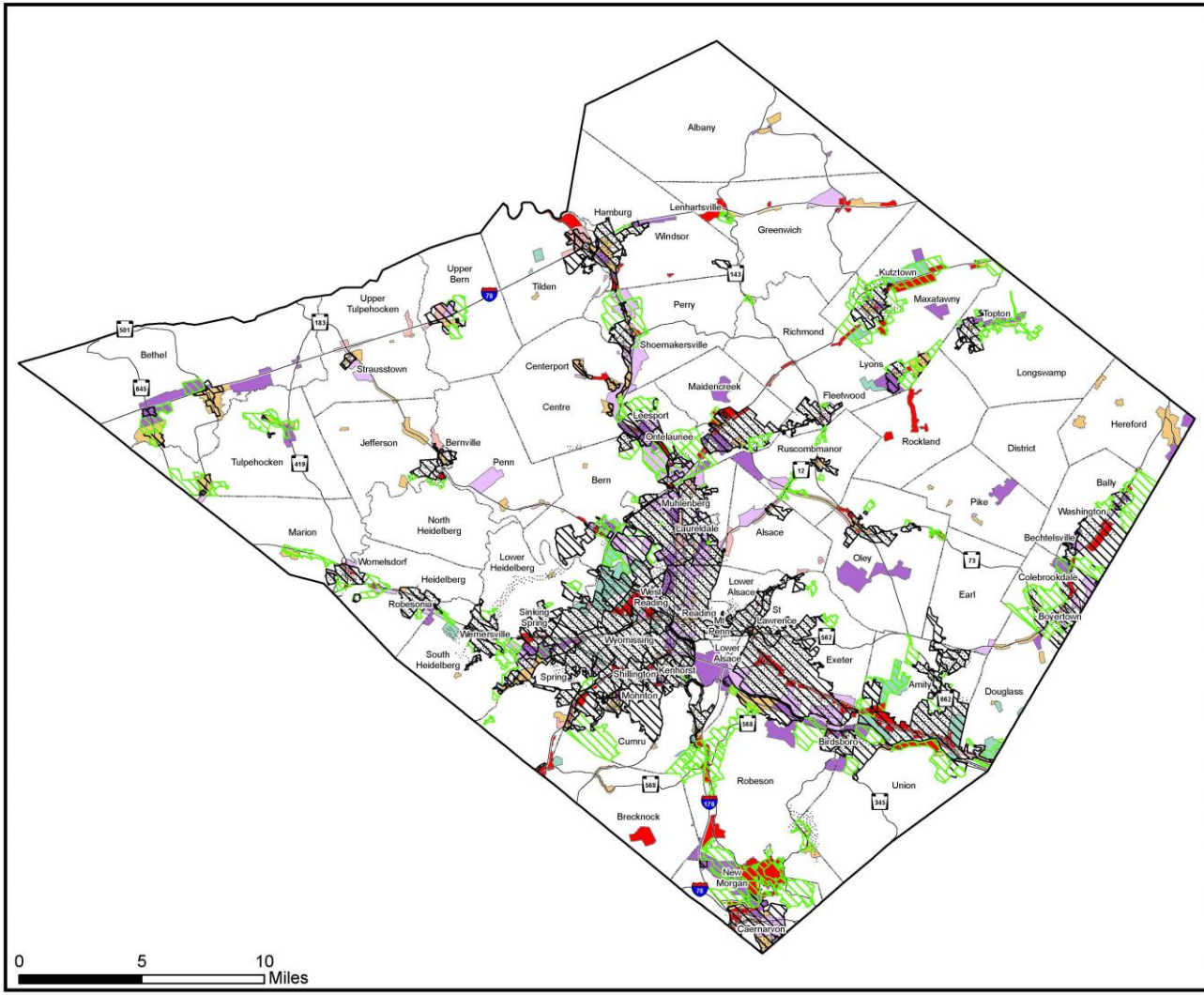



Sewer
Capacity
Case Study

Berks County Sewer Analysis History

- 1997 and 2011 Water and Sewer Regionalization Studies
- Suitable Commercial and Industrial Sites
- Land Suitability Tool


Public Water and Sewer Areas
Berks County
May 2022
N
Albany
Windsor
Hamburg
Lenhartsville
Greenwich
Maxatawny
Kutztown
Topton
Longswamp
Upper Bern
Tilden
Perry
Richmond
Upper Tulpehocken
Bethel
Centerport
Shoemakersville
Lyons
Maidencreek
Fleetwood
Rockland
Hereford
District
Centre
Leesport
Ontelaunee
Ruscombmanor
Jefferson
Penn
Bernville
Tulpehocken
Bern
Pike
Muhlenberg
Laureldale
Bally
Washington
Bechtelsville
Marion
North Heidelberg
Alsace
Womelsdorf
Heidelberg
Robesonia
Lower Heidelberg
Lower Alsace
Oley
Earl
Colebrookdale
Boyertown
Reading
Wernersville
Sinking Spring
Wyomissing
West Reading
Mt Penn
St Lawrence
South Heidelberg
Kenhorst
Exeter
Amity
Douglass
Shillington
Mohnton
Spring
Cumru
Birdsboro
Robeson
Brecknock
Union
New Morgan
Caernarvon
Legend
Public Water Service Areas
Existing Public Sewer Service Areas
Proposed Public Sewer Service Areas
Municipal Boundaries
BCPC
Planning Commission
www.countyofberks.com/planning



Sewer and Water Regionalization Update
December 2011

Public Sewer and Water Service Areas with Composite Zoning

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Composite Zoning

- Commercial
- General Commercial
- Light Industrial
- General Industrial
- Planned Office Business
- Town Center / Village Commercial

- Existing Sewer Service
- Proposed Sewer Service
- Existing Water Service
- Major Roads
- Municipal Boundaries

Source: Berks County Planning Commission, Berks County GIS, Berks County Department of Emergency Services, DEP, local municipalities
Map created by: Berks County Planning Commission

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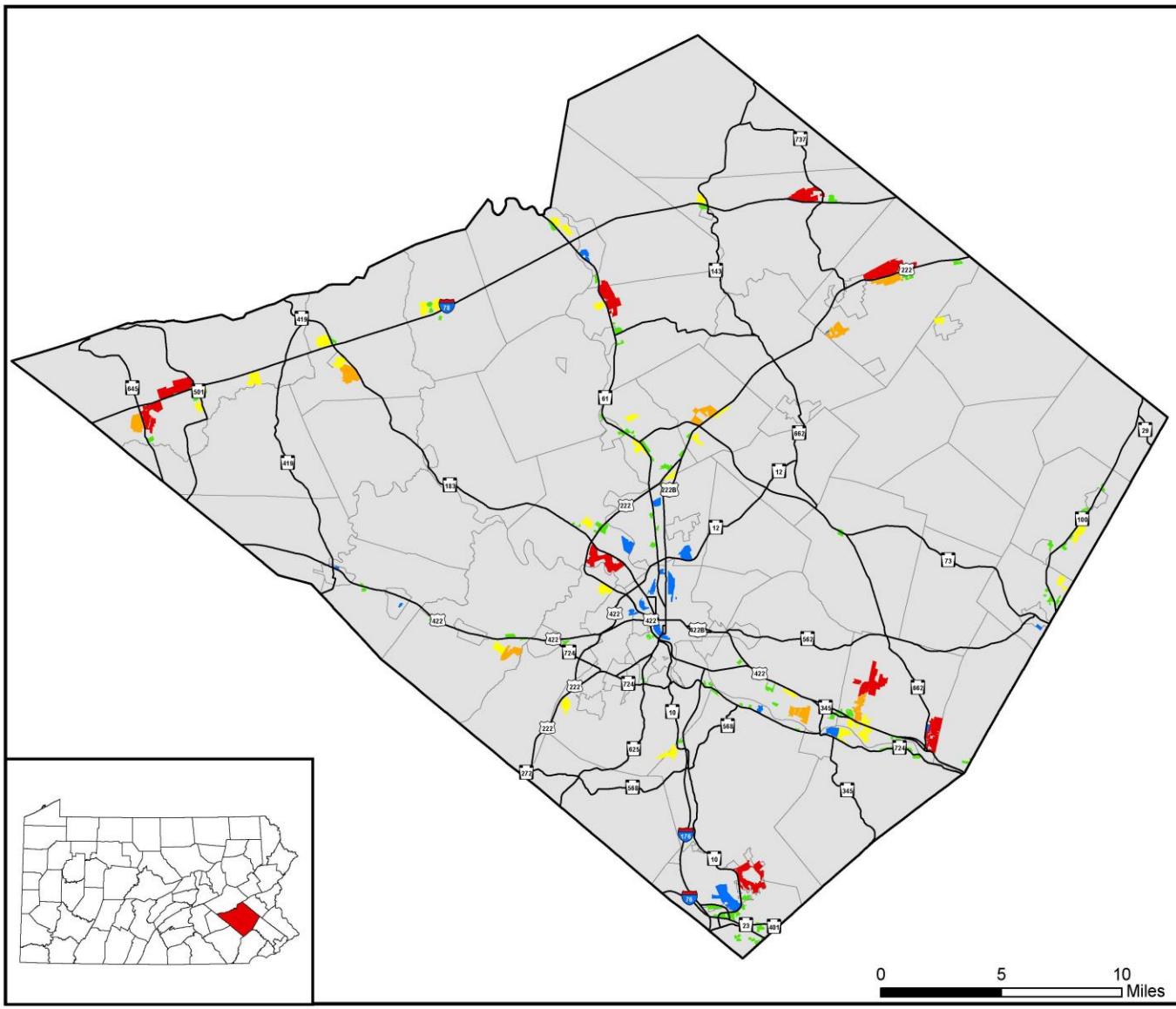
FIGURE 3.17

Berks County Comprehensive Plan Update
Adopted: September 2013

Areas Suitable for Commercial / Industrial Growth

Berks County, Pennsylvania



Acreage of Suitable Areas

- 300.01 - 768.96 (10 areas)
- 150.01 - 300.00 (8 areas)
- 50.01 - 150.00 (29 areas)
- 5.01 - 50.00 (94 areas)
- 1.44 - 5.00 (12 areas)
- Redevelopment Areas
- Berks County Boundary
- Municipal Boundaries
- Major Roads

Source: Berks County Planning Commission, Berks County Department of Emergency Services

Published by the Berks County Planning Commission

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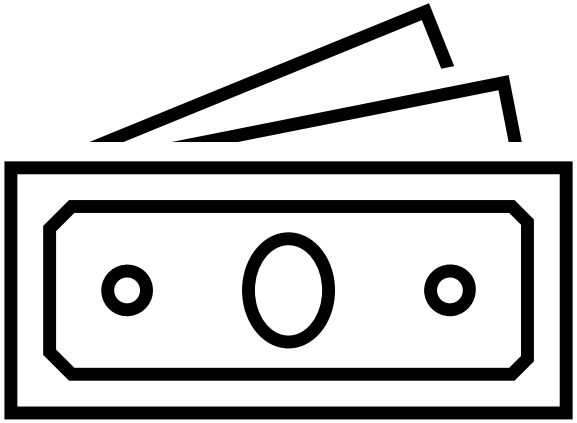
2022 Sewer Capacity Study

The Why?

- Support economic development efforts in the County
- Understanding the wastewater infrastructure of the County

The Why?

- Berks County American Rescue Plan Allocations
- Infrastructure Investment and Jobs Act



The How

- Review of Chapter 97 reports
- Coordination through the County Water and Sewer Association
- Outreach to Municipalities and Authorities

Conclusions

1

33 of 72 Municipalities indicate that there is sewer capacity available

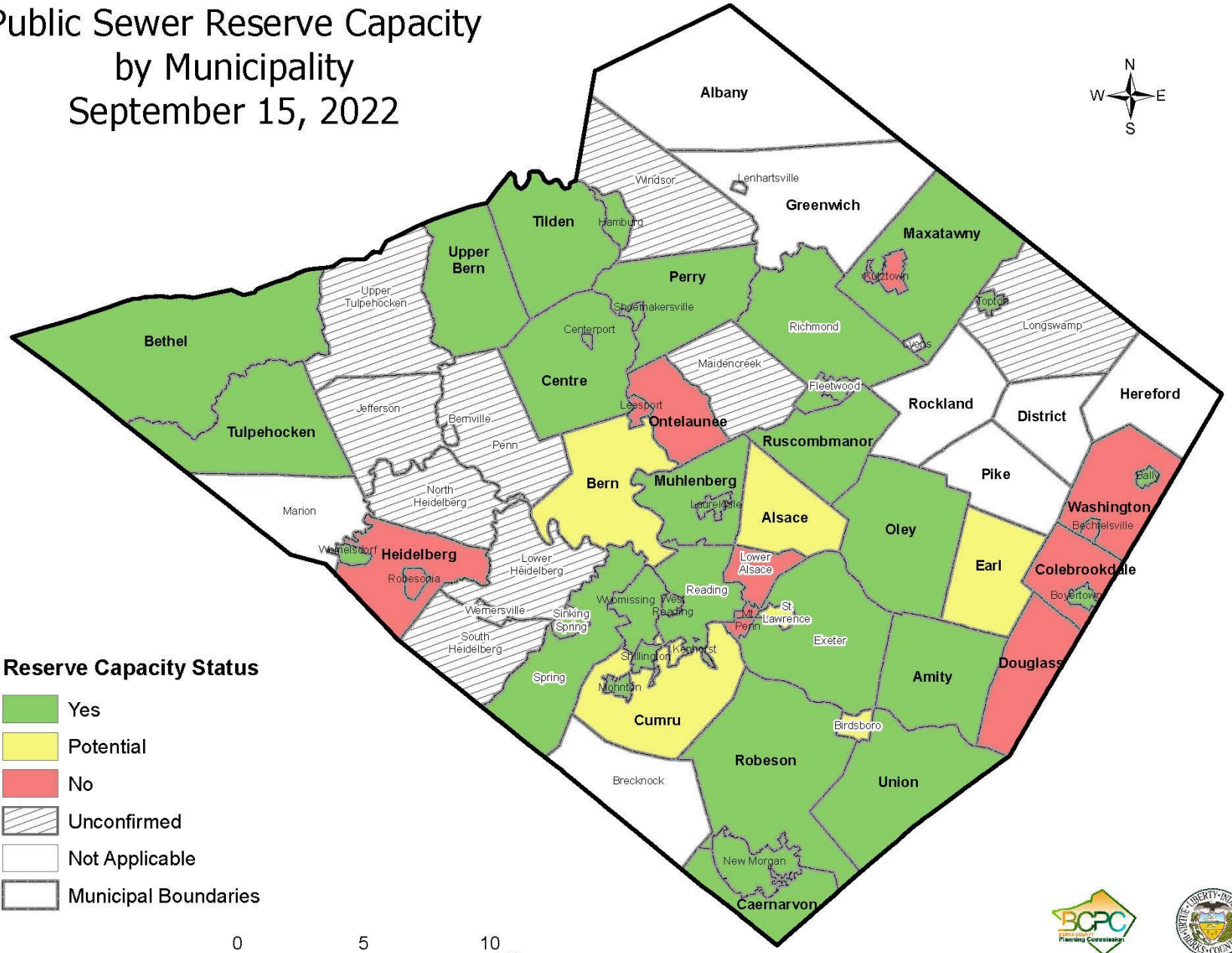
2

11 of the 72 Municipalities stated they are at capacity

3

There is still unconfirmed capacity in Municipalities which have growth areas

Public Sewer Reserve Capacity by Municipality September 15, 2022



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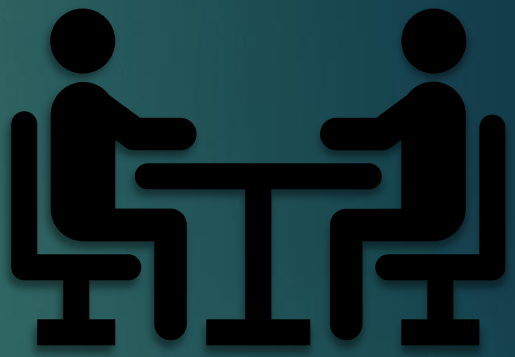
Application of Analysis

Discussion Questions

- How much have you included utility infrastructure in your land use planning?
- How have you used utility information in your review process?
- How do you collect this information?
- What has been your local authority/municipality participation in collecting this type of information?
- How have you used utility infrastructure information in economic development planning?
- How do you share your utility information with the development community?



Thank You

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Planning Commission