

Environmental Assessment

**Turning Point Solar Generating Project
Noble County, Ohio**

Turning Point Solar LLC



**U.S. Department of Agriculture
Rural Utilities Service (RUS)**

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ENVIRONMENTAL ASSESSMENT

TURNING POINT SOLAR PROJECT

Brookfield Township, Noble County, Ohio

Prepared for:
**U.S. Department of Agriculture
Rural Utilities Service**



January 2012

Prepared by:
**URS Corporation
Cleveland, Ohio**

URS

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ACRONYMS AND ABBREVIATIONS

ABB	American Burying Beetle
ADT	Average Daily Traffic
AEP	American Electric Power Inc.
AEP Ohio	American Electric Power Ohio (Columbus Southern Power Company and Ohio Power Company)
AMSL	above mean sea level
ANSI	American National Standards Institute
APE	Area of Potential Effects
CFR	Code of Federal Regulations
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent
D	distance from the equipment to the receiver
dBA	decibel on an A-weighted scale, used to approximate the human ear's response to sound
DOE	U.S. Department of Energy
D _{ref}	the reference distance
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
GenCo	a to be formed company, that will build and own the solar facility
Gen-tie	generation-tie-line
GHGs	Greenhouse gases
GWP	global warming potential
HVAC	heating, ventilation and air conditioning
Inc.	Incorporated
ISO	International Organization for Standardization
KOP	Key observation point
kV	kilovolt
kW	kilowatt
L _{dn}	day-night average noise level
L _{eq}	Equivalent continuous sound level
L _{max}	maximum sound levels over a given measurement time period
L _{min}	minimum measured sound levels over a given measurement time period
L _p	sound pressure level
LLC	Limited Liability Company
LORS	laws, ordinances, regulations and standards
LOS	Level of Service
LT	long term
M	million
MOU	Memorandum of Understanding
Mph	miles per hour
MSL	mean sea level

ACRONYMS AND ABBREVIATIONS

MW	Megawatts
MWAC	Megawatts alternating current
MWh	megawatt-hours
NCSS	National Cooperative Soil Survey
NEPA	National Environmental Policy Act
N ₂ O	nitrous oxide
OAC	Ohio Administrative Code
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method
ORC	Ohio Revised Code
PJM	PJM Interconnection LLC
PPE	personal protective equipment
PUCO	Public Utility Commission of Ohio
PPV	peak particle velocity
PPV _{equip}	peak particle velocity in in/sec of the equipment adjusted for distance
PPV _{ref}	reference vibration level in in/sec at D _{ref}
PV	photovoltaics
REPPA	Renewable Energy Power Purchase Agreement
RES	Renewable Energy Standards
RTO	regional transmission organization
RUS	Rural Utilities Service
S.B.	Senate Bill
SLM	sound level meter
SPL	sound pressure level
s-REC	solar Renewable Energy Certificate
SR	State Route
ST	short term
TPS	Turning Point Solar
TWh	terawatt hours
USC	United States Code
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
US DOE	U.S. Department of Energy
US EIA	U.S. Energy Information Administration
USGS	U.S. Geological Survey

EXECUTIVE SUMMARY

The Rural Utilities Service (RUS), an agency responsible for the administration of certain United States Department of Agriculture (USDA) Rural Development Programs, may receive an application to provide financing for portions of the Turning Point Solar project (TPS). In accordance with the National Environmental Policy Act (NEPA), RUS has prepared an Environmental Assessment (EA). Turning Point Solar LLC, a joint venture between Agile Energy Inc. and New Harvest Ventures, proposes the construction of a new 49.9 megawatt (MW) solar electric generation facility (the “Project”) using photovoltaic panel arrays mounted on fixed solar racking equipment. In addition to the new facility, a new 1.87-mile transmission feeder line would be constructed as part of the proposed action in order to connect the generation facility to the transmission grid. The Project would be built on reclaimed coal strip mine land owned by the Ohio Power Company at a site located in Noble County, Ohio, about eight miles northwest of Caldwell, Ohio.

This EA will serve as a detailed written record of the environmental analysis completed for the proposal and will be used along with other considerations to determine whether RUS provides the requested financing.

The purpose of the proposed action is to provide solar energy for Columbus Southern Power Company and Ohio Power Company, collectively American Electric Power Ohio (“AEP Ohio”) to meet its targets for renewable energy generally and solar energy, specifically, as required under Section 4928.64 of the Ohio Revised Code (ORC) as established per S.B. 221. Ohio law (ORC 4928.64) requires that electric distribution utilities and electric services companies secure a portion of their electricity supplies from alternative energy resources. By the year 2025, 25 percent of the electricity sold by each utility or electric services company within Ohio must be generated from alternative energy sources. At least 12.5 percent must be generated from renewable energy resources, including wind, hydro, biomass and solar. Furthermore, at least 0.5 percent of the total electric supply must be met by solar energy specifically. The current Project, at 49.9 MW, when combined with the currently operational Wyandot solar photovoltaic project, will slightly exceed the solar generation required to meet AEP Ohio’s benchmark within the next several years.

TPS is developing the 49.9 MW energy generation project on 771 acres of land in southeastern Ohio. The Project is a proposed solar generation facility using photovoltaic module arrays mounted on fixed solar racking equipment. The Project would be built on reclaimed coal strip mine land owned by the Ohio Power Company at a site located in Noble County, Ohio, about eight miles northwest of Caldwell, Ohio and three miles south of Cumberland, Ohio to the east of State Route (SR) 83. Access to the facility is from SR 83. The facility site is located approximately 20 miles (via state routes) south of Cambridge, Ohio, 29 miles (via Interstate and state routes) southeast of Zanesville, Ohio, and 39 miles (via Interstate and state routes) north of Marietta, Ohio. TPS and AEP Ohio executed a Participation Agreement on June 23, 2011 pursuant to which TPS will be responsible for completing development of the Project. Turning Point Solar will subsequently sell the development assets pursuant to the Development Asset Purchase Agreement to Turning Point Solar Generation LLC (“TPSG”), a to be formed company that will complete any outstanding development, and build and own the solar facility. The

proposed solar generating facility would interconnect to Ohio Power Company's South Cumberland 138/69 kV substation.

Subsequent sections of this EA provide a more detailed description of the proposed action, a description of the historical and existing environment in the project area, an analysis of expected environmental impacts, and finally, mitigation measures that will reduce potential impacts.

Table ES-1. Summary of Expected Impacts

Impact Category	EA Section	Impact
Land Use – Total Project Area	4.1	771 acres
Land Use – Project Area Disturbed	4.1	422.6 acres
Wetlands – Jurisdictional	4.3.1	0.01 acre
Wetlands – Isolated	4.3.1	4.767 acres
Streams – Isolated	4.3.1	1,196 linear feet
Ponds – Isolated	4.3.1	0.18 acre
Floodplains	4.3.2	No impacts
Sole source aquifers/drinking water	4.3.3	No impacts
Immature forest - cleared for transmission line	4.4.1	15.6 acres
Wildlife	4.4.2	Minimal impacts
Threatened and Endangered Species	4.4.3	No/Minimal impacts
Air Quality	4.5.4	Minimal impacts
Socioeconomics	4.6	Minor impacts
Cultural Resources and Historic Properties	4.7	No impacts
Visual Resources	4.8	No/Minimal impacts
Noise	4.9	No/Minimal impacts
Transportation	4.10	Minor impacts

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

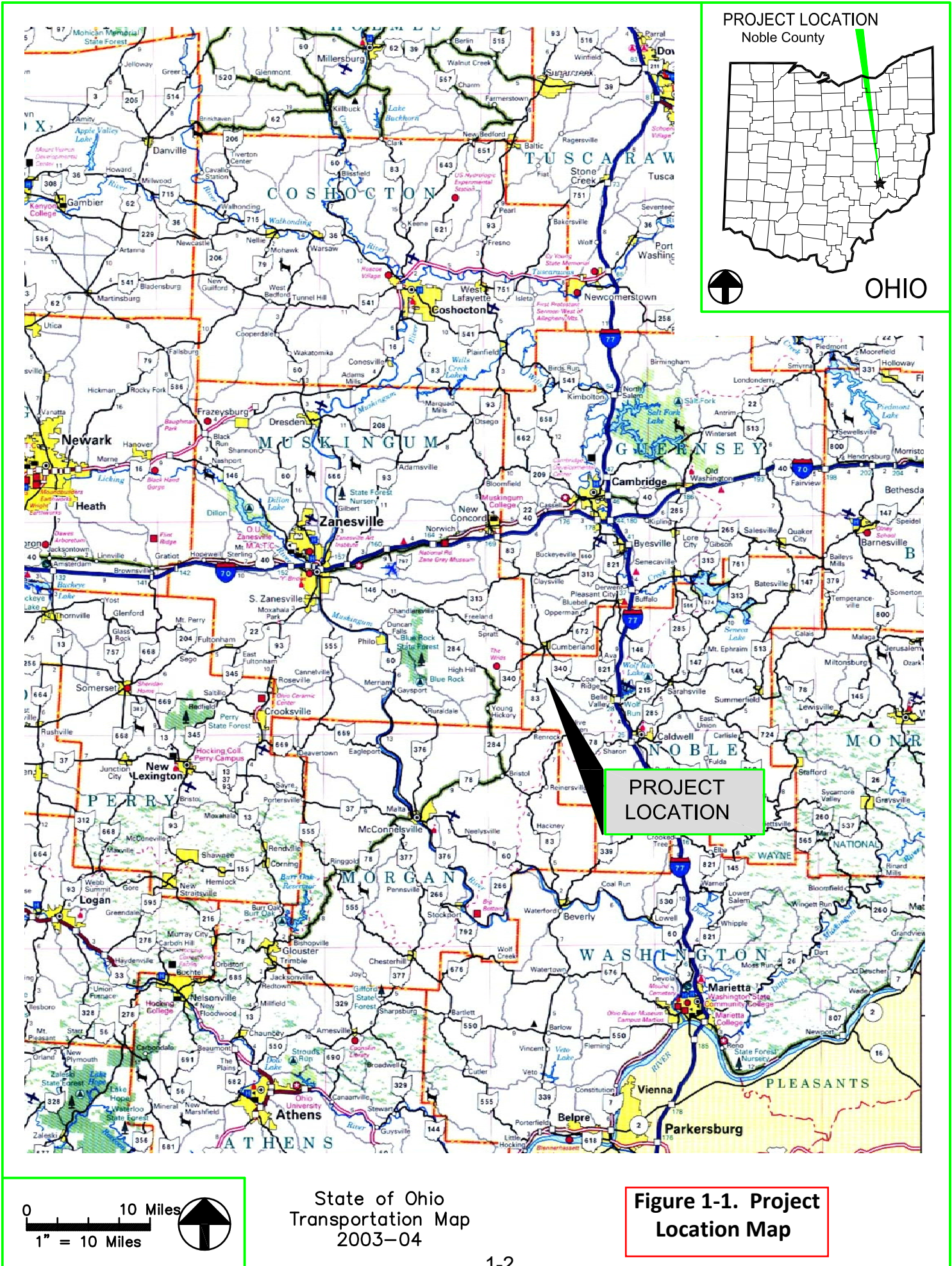
Turning Point Solar LLC (“TPS”), a joint venture between Agile Energy, Inc. and New Harvest Ventures, is developing the Turning Point Solar electric generation project on 771 acres of land in southeastern Ohio (**Figure 1-1**). The Turning Point Solar Project (the “Project”) is a proposed 49.9 megawatt-AC (MW) solar generation facility using photovoltaic panel arrays mounted on fixed solar racking equipment. The Project would be built on reclaimed coal strip mine land owned by Ohio Power Company at a site located in Noble County, Ohio, about eight miles northwest of Caldwell, Ohio. The land was mined using strip-mining techniques by the Central Ohio Coal Company between 1969 and 1991, after which time it was reclaimed.

The Project is expected to be built in three phases: Phase 1 (20 MW) is scheduled to come online in 2012 or 2013; Phase 2 (15 MW) is scheduled to come on-line in 2014; and Phase 3 (14.9 MW) is scheduled to come on-line in 2015. However, there exists a potential for the project to be constructed in an expedited fashion. This assessment examines the environmental impacts for all phases of the Project. Turning Point Solar LLC and AEP Ohio executed a Participation Agreement on June 23, 2011, pursuant to which TPS will be responsible for completing the development of the Project. TPS will sell the project development assets pursuant to the Development Asset Purchase Agreement to Turning Point Solar Generation LLC (“TPSG”), a yet to be formed company that will finish development, and build and own the solar facility. TPSG will lease the solar facility to Columbus Southern Power Company and Ohio Power Company, collectively American Electric Power Ohio (“AEP Ohio”), which will operate and maintain the solar facility over the life of the asset. AEP Ohio, an operating unit of American Electric Power Inc. (“AEP”), serves nearly 1.5 million customers in Ohio and the northern panhandle of West Virginia. AEP Ohio will use the solar renewable energy credits (s-RECs) produced by the generation facility to support its nearer term compliance with Ohio’s solar generation benchmark mandated by Section 4928.64 of the Ohio Revised Code (ORC) as established per Substitute Senate Bill 221 (“S.B. 221”).

Turning Point Solar intentionally located the Project in Ohio’s Appalachian region to serve as a centerpiece for integrated rural economic development (Ohio Air Quality Development Authority, 2010). It is anticipated that the Project will bring significant construction jobs to Appalachian Ohio (**Figure 1-2**). The Appalachian region in general and Appalachian Ohio, specifically, have historically been among the regions of the country with the highest poverty and unemployment rates. Despite some recent gains, Appalachia still does not enjoy the same economic vitality as the rest of the nation. Central Appalachia, in particular, still battles economic distress with concentrated areas of high poverty, unemployment, poor health, and severe educational disparities.



Figure 1-2. Appalachian Ohio Counties



PROJECT LOCATION

Figure 1-1. Project Location Map

Recent economic data show that the Region has fared far worse in the current recession than the rest of the nation (Appalachian Regional Commission, 2011). U.S. Census Bureau data show that Noble and Morgan Counties have per capita incomes of about two-thirds that of Ohio as a whole, while Muskingum County’s per capita income is about 83 percent of the state average (**Table 1-1**). The percentage of people below the poverty level in Noble and Muskingum Counties compared to the statewide average is about 25 percent higher, while Morgan County is about 58 percent higher (U.S. Census Bureau, 2010). Noble and Morgan Counties are considered “distressed counties” in the Appalachian Regional Commission’s Fiscal Year 2012 rankings (**Figure 1-3**). Distressed counties are the most economically depressed counties. They rank in the worst 10 percent of the nation’s counties (Appalachian Regional Commission, 2011). In the most recently available unemployment statistics (July 2011), Morgan (#6), Noble (#9), and Muskingum (#12) Counties rank in the top twelve highest unemployment rates in Ohio (Bureau of Labor Market Information, 2011).

Table 1-1. Per Capita Income and Percent below Poverty, Selected Appalachian Ohio Counties¹

	USA	Ohio	Noble Co.	Morgan Co.	Muskingum Co.
Per capita money income, 1999	\$21,587	\$21,003	\$14,100	\$13,967	\$17,533
Persons below poverty level, percent, 2008	13.20%	13.30%	16.50%	21.10%	16.90%

¹Source: U.S. Census Bureau. 2010. State & County QuickFacts

1.2 PROPOSED ACTION

Subsequent to the environmental review process, TPS will apply for financial assistance from the United States Department of Agriculture Rural Utilities Service (USDA RUS). The RUS must decide whether or not to provide the financing assistance to TPS for the Project. Actions such as providing financing assistance must comply with the National Environmental Policy Act (NEPA) which requires that the environmental consequences of the proposed action and its alternatives be examined. This Environmental Assessment (EA) presents such an examination. RUS’ decision to approve financial assistance will be the analysis outlined in this EA in addition to subsequent detailed engineering and financial reviews.

URS, retained by TPS, prepared this assessment in accordance with RUS Bulletin 1794A-601, Guide for Preparing an Environmental Report for Electric Projects Requiring an Environmental Assessment. RUS has completed an independent analysis of this document and concurs with its scope and content. In accordance with 7 CFR 1794.41, RUS has adopted this assessment as its EA for the Project.

County Economic Status in Appalachia, Fiscal Year 2012

(Effective October 1, 2011 through September 30, 2012)

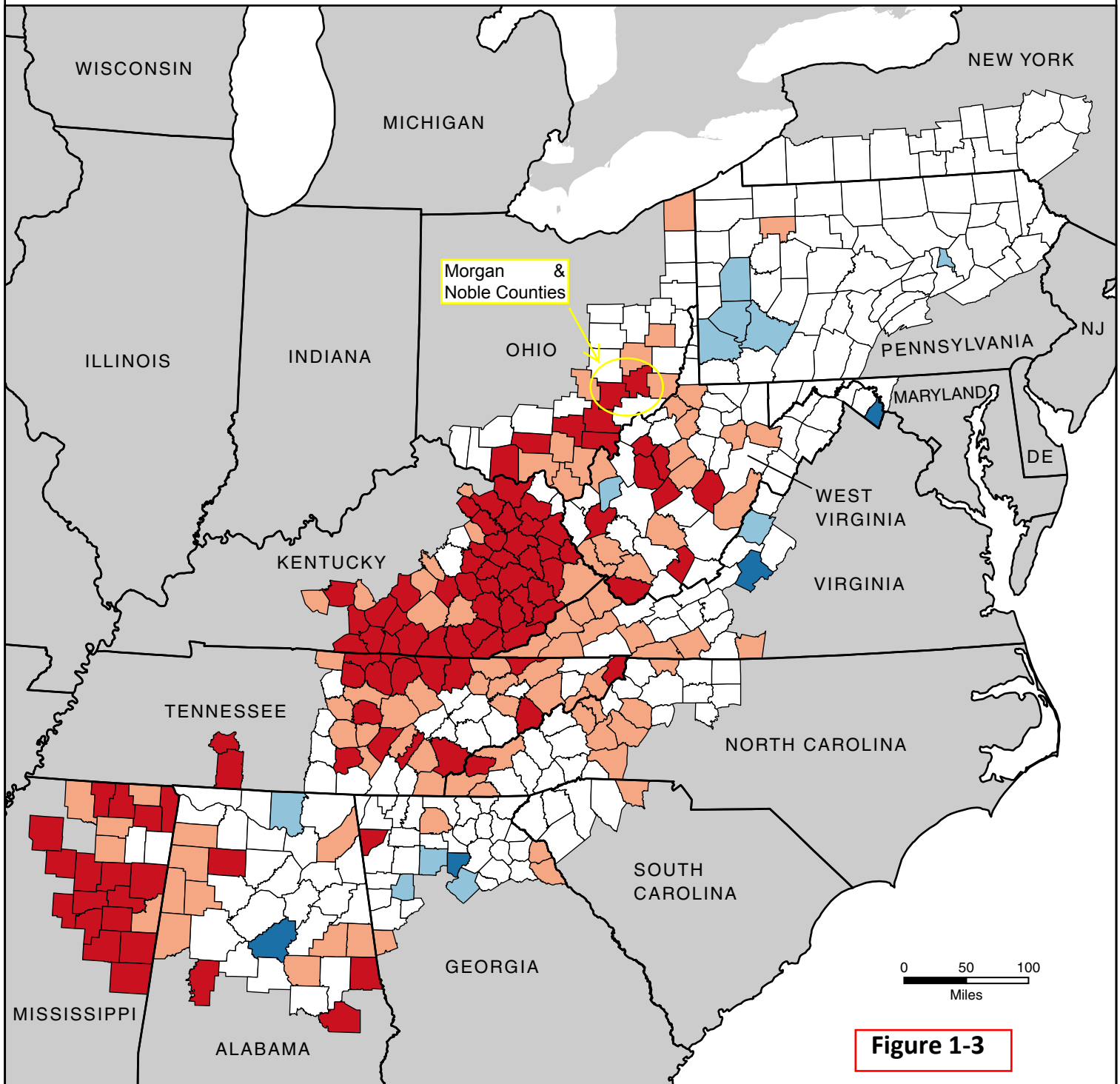


Figure 1-3

The Appalachian Regional Commission uses an index-based county economic classification system to identify and monitor the economic status of Appalachian counties. See the reverse side for a description of each economic level.

County Economic Levels

- Distressed (96)
- At-Risk (90)
- Transitional (219)
- Competitive (11)
- Attainment (4)



Map Created: March 2011

Data Sources:

Unemployment data: U.S. Bureau of Labor Statistics, LAUS, 2007–2009

Income data: U.S. Bureau of Economic Analysis, REIS, 2008

Poverty data: U.S. Census Bureau, American Community Survey, 2005–2009

TPS is proposing a new solar generation facility using photovoltaic module arrays mounted on fixed solar racking equipment at a site located in Noble County, Ohio. In addition to the generating facility, a new transmission feeder line is needed to connect the generation facility to the transmission grid at Ohio Power Company's South Cumberland Substation and is included as part of the proposed action. A detailed description of the proposed action is included in **Section 2.5, Description of Proposed Action**, of this document.

1.3 APPLICANT'S PURPOSE AND NEED

In May 2008, Ohio enacted broad electric industry restructuring legislation (S.B. 221) containing advanced energy and renewable energy generation and procurement requirements for the state's electric distribution utilities and electric service companies. Under the standard, discussed in more detail below, utilities must provide 25% of their retail electricity supply from alternative energy sources by 2025. The purpose of this proposal is to provide solar energy for AEP Ohio to meet its targets for renewable energy, generally, and solar energy, specifically, as required under Section 4928.64 of the ORC as established per S.B. 221.

Ohio law (ORC 4928.64) requires that electric distribution utilities and electric services companies secure a portion of their electricity supplies from alternative energy resources. All companies must meet annual renewable and solar energy benchmarks which, when viewed as a percentage of the electricity supplied, increase annually. By the year 2025, 25 percent of the electricity sold by each utility or electric services company within Ohio must be generated from alternative energy sources. At least half of the 25%, (12.5 percent of the total electricity supplied) must be generated from renewable energy resources, including wind, hydro, biomass and solar. The remainder may be generated from advanced energy resources, including nuclear, clean coal and certain types of fuel cells. In addition, at least one half of the renewable energy requirement must be generated by facilities located in Ohio, while the remainder may be generated by resources that must demonstrate deliverability into the state of Ohio. Moreover, there is a further sub-requirement that solar constitute at least 0.5% of total electricity supply by 2024 and thereafter. The total renewable percentage requirement (discussed above) includes the solar specific portion.

The detailed schedule of annual compliance benchmarks for renewable and solar energy is shown below in **Table 1-2**. A s-REC is a solar renewable energy credit (also referred to as a solar Renewable Energy Credit). It represents the environmental benefits of producing one megawatt-hour (MWh) of electricity using renewable solar technology. Only solar photovoltaic installations in Ohio and bordering states are eligible for Ohio s-RECs (IN, KY, WV, PA, and MI). However, of these, only those produced in Ohio meet the in-state requirements.

Table 1-2. Energy Benchmarks Mandated by Ohio Law (ORC 4928.64)

By end of year:	Renewable energy resources	Solar energy resources
2011	1.0%	0.030%
2012	1.5%	0.060%
2013	2.0%	0.090%
2014	2.5%	0.12%
2015	3.5%	0.15%
2016	4.5%	0.18%
2017	5.5%	0.22%
2018	6.5%	0.26%
2019	7.5%	0.30%
2020	8.5%	0.34%
2021	9.5%	0.38%
2022	10.5%	0.42%
2023	11.5%	0.46%
2024 and each calendar year thereafter	12.5%	0.50%

Accordingly, by 2015, 15 percent of AEP Ohio’s generating capacity must be supplied from solar energy resources. As reflected in AEP Ohio’s 2010 Integrated Resource Plan, the cumulative solar (nameplate) capability required for AEP Ohio by the year 2015 was established at 56.2 MW. Nameplate capacity is the number registered with authorities for classifying the maximum power output of a power station usually expressed in MW. Therefore, the current Project, at 49.9 MW, when combined with the Wyandot Solar Farm, discussed in **Section 2.1.3**, at 10.1MW, will slightly exceed (49.9 MW + 10.1 MW = 60.0 MW) the 56.2 MW required to meet AEP Ohio’s benchmark within the timeframe under which this Project is proposed (i.e., the phasing of the Project) (AEP Ohio, 2010). In addition, all of this capability is to be generated at facilities located in Ohio, which satisfies the minimum in-state generation requirement.