


## Solar Energy Development

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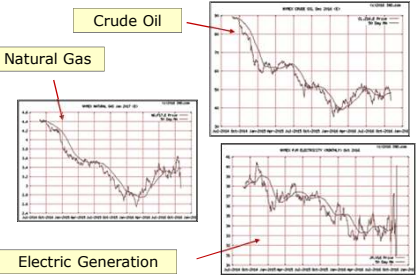
### Community Stakeholder Responsibilities




**Dale Arnold,**  
 Director, Energy Development  
 Ohio Farm Bureau Federation  
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## Energy Market Trends

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**Crude Oil**

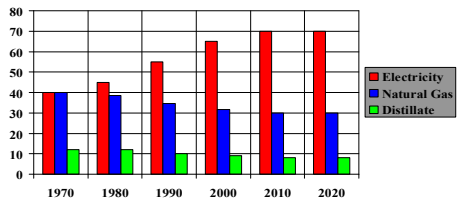
**Natural Gas**

**Electric Generation**

## Energy Market Trends

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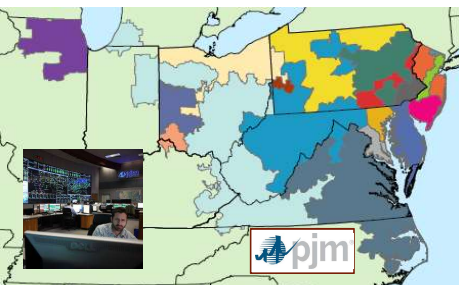
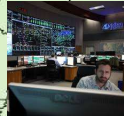

### Agricultural Energy Consumption MMBtu's Consumed by Fuel Source 1970-2020



Year	Electricity	Natural Gas	Distillate
1970	40	40	10
1980	45	40	10
1990	55	35	10
2000	65	30	10
2010	70	30	10
2020	75	30	10

## Energy Market Trends

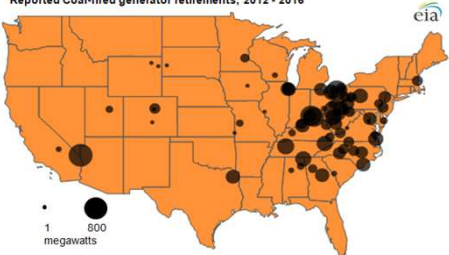

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## Energy Market Trends

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### Reported Coal-fired generator retirements, 2012 - 2016

## Energy Market Trends

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### Ohio Power Plants - Closed

Name	Capacity	Owner	Type
Ashabula Power Plant	244	FirstEnergy	Coal
E.M. Poston Power Plant		AEP	Coal
Eastlake Power Plant	1257	FirstEnergy	Coal/NG
J.M. Stuart Station	2318	AES/DPL Inc., Dynergy, and AEP	Coal
Killen Station	618	AES/DPL Inc., Dynergy	Coal
Lake Shore Power Plant	245	FirstEnergy	Coal
Muskingum River Power Plant	1375	AEP	Coal
O.H. Hutchings Station	414	AES/DPL Inc.	Coal
Philo Power Plant	510	AEP	Coal
Picaway Power Plant	220	AEP	Coal
R.E. Burger Power Station	568	FirstEnergy	Coal
Richard H. Gorsuch Station	200	AMP - Ohio	Coal
Tait Power Station	586	AES/DPL Inc.	Oil/NG
Toronto Power Plant		FirstEnergy	Coal
W.C. Berkjord Power Station	1304	Duke, AES/DPL, AEP	Coal

## Energy Market Trends

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### Ohio Power Plants - Operational

Name	Capacity	Owner	Type
Avon Lake Power Station	680	NRG Energy	Coal
Bowling Green	20	NextEra	Solar
Napoleon	4	AMP - Ohio	Solar
Gavin Power Plant	2640	Gavin Power LLC	Coal
W.H. Sammis Power Plant	2233	FirstEnergy	Coal
Cardinal Power Plant	1800	Buckeye Power REC	Coal
Conesville Power Plant	1375	AEP/ES/DPL	Coal
Hanging Rock	1430	Dynergy	NG
Lordstown	940	Clean Energy Future, LLC AEP	NG
Perry	1231	FirstEnergy	Nuclear
Miami Fort Power Station	1020	Dynergy	Coal
Kyger Creek	1086	OVEC	Coal
Oregon Clean Energy Center	908	Ares Management	NG
Rolling Hills	865	Rolling Hills Generating	NG
Waterford Energy Center	821	Waterford Power, LLC	NG

Plants Scheduled to Close by 2021 in Red

## Energy Market Trends

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### Ohio Power Plants - Operational

Name	Capacity	Owner	Type
Carroll Energy Center	700	Advanced Power	NG
Washington Energy Facility	620	Dynergy	NG
Darby	480	Darby Power, LLC	NG
Middletown Energy Center	475	NTE Energy	NG
Davis-Besse	889	FirstEnergy	Nuclear
West Lorain	545	FirstEnergy	NG
Robert F. Monie	510	Buckeye Power REC	NG
Fremont	707	AMP-Ohio	NG
Dresden	580	AEP	NG
Wyandot	12	PSE Group	Solar
Madison Peaking Station	677	Dynergy	NG
Blue Creek	350	Iberdrola Renewables	Wind
Timber Road	99	EDP Renewables	Wind
O'Staughnessy Dam	5	City of Columbus	Hydro
Minster	10	City of Minster/Amp-Ohio	Solar

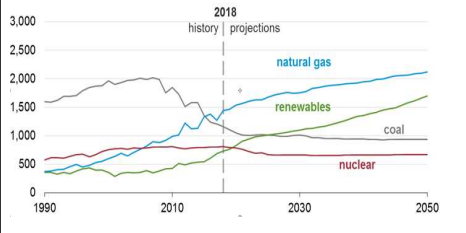
Plants Scheduled to Close by 2021 in Red

## Energy Market Trends

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Electricity generation from selected fuels (Reference case)  
billion kilowatthours



## Energy Market Trends


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### Strategies to Control Energy Costs

Diversified Energy Portfolio – A teamwork approach utilizing several different fuel sources.

Movement from centralized to decentralized energy generation transmission and distribution systems.

*No Silver Bullets...  
...But a Lot of Silver Buckshot.*



## Diversified Projects...

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## System Development

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- Software Deployment
- Lighting Technology
- HVAC Upgrades
- Insulation & Sealing
- Aggressive DSM/EE Policy



## Solar Technology in Ohio

On-Site Projects - +5000 projects for home, farm and business use.

Utility Scale Projects Under PUCO/OPSB Jurisdiction:


- Upper Sandusky Solar Farm – Operational
- Hardin Solar Energy I – Permitted
- Vinton Solar Energy - Permitted
- Hillcrest Solar Energy – Permitted
- Hardin Solar Energy II – Permitted
- Willowbrook Solar – Permitted
- Nestlewood Solar - Permitted
- Hecate Solar - Permitted
- Angelina Solar – Pending
- Alamo Solar – Pending




## Farm Bureau Policy

**Energy Development** - OFBF supports energy development efforts that involve the project developer, utilities, regulatory agencies, government at the local, state and federal levels, economic development authorities and community groups.


These efforts should focus on creation of projects that address environmental concerns, consider aesthetic needs and provide economic benefits to landowners and the community.



## Farm Bureau Policy

**Energy Development** - OFBF recognizes the rights of landowners to enter into effective partnerships and agreements with developers to responsibly use land and resources to develop energy projects.


We expect these partners to fully disclose all parts of the development process, including installation and operation of facilities as well as repair and remediation guidelines to put adjoining agricultural ground back into production.



## Farm Bureau Policy

**Wind & Solar** - OFBF supports Ohio Power Siting Board rules, regulations, stipulations, orders and amendments that provide landowner friendly, reasonable and uniform statewide procedures for siting, placement, construction and operation of utility-scale wind and solar farms.

Everyone needs to be heard; and everyone needs to recognize their civic responsibility to be engaged in this process.



## General Site Characteristics



Operational Area (Footprint) – 60 to 1000 open acres on working ground...

Close proximity to electric transmission infrastructure...

Setbacks from public roads, buildings, tall structures...

Vegetation management aesthetic and drainage protection plans...

Barriers and boundaries...

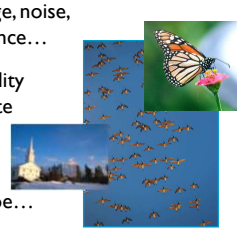




## Issues to Consider

Environmental – Impact on wildlife, soil and water quality, drainage, noise, electromagnetic interference...

Economic – Need for facility on national, regional, state and local levels...

Aesthetics – Historic or natural features, viewscape...





## Issues to Consider

Regulatory – Work with the Ohio Power Siting Board; Local and Judicial Hearings

Local Government – County, Township Involvement, Permits and Stipulations

Neighbors - Maintaining Good Relations...




## Issues to Consider



**Know the Regulatory Approval Process...**

Depending on the size of the project, multiple layers of government and regulatory agencies will be involved in the process.

Evaluations are a judicial process.

Everything is a matter of public record and judicial scrutiny.

Public meetings and hearings on local and state levels.



## Planning and Involvement

### Utility Scale Projects (+50 MW)

Utility solar project development is governed by Ohio Power Siting Board (OPSB).

Evaluation includes extensive environmental, economic and aesthetic considerations.

Local government and community input required.






## Regulatory Authority

Ohio Power Siting Board (OPSB): Evaluates and approves major utility infrastructure construction in Ohio; issues its *Certificate of Public Need and Necessity*.

Part of the **Public Utilities Commission of Ohio (PUCO)**

Coordinates the evaluation process; work with state and federal agencies.



## Regulatory Authority

**Voting Members:**

Chairman, PUCO	Director, OH EPA
Director, ODA	Director, ODH
Director, ODNR	Director, ODOD
Appointed Engineer	

**Non-Voting Members:**



Two House and Two Senate Members

## Regulatory Process

Board Decision – Must find and determine project on seven statutory criteria.

- The need for the facility.
- Probable environmental impact.
- Technical capability.
- Air and water pollution compliance.

## Regulatory Process

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Board Decision – Must find and determine project on seven statutory criteria.

- Facility will serve in the public interest, convenience and necessity.
- Impact on viability of agricultural land.
- Facility incorporates maximum water conservation practices.





## Regulatory Process

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Application to Become a Party of Record - Ohio Administrative Code 4906-2-12(B)

- Eligible Parties – File a formal *Motion to Intervene* in case proceedings.
- The board or the administrative law judge shall grant petitions for leave to intervene only upon a showing of good cause, and may consider....



## Regulatory Process

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Application to Become a Party of Record - Ohio Administrative Code 4906-2-12(B)

- The nature and extent of the person's interests, and the extent to which the person's interest is represented by existing parties.
- The person's potential contribution to the resolution of issues involved in the proceeding.
- Whether granting the requested intervention would unduly delay the proceeding or unjustly prejudice an existing party.



## Regulatory Process

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Ohio Power Siring Board – Hearing Process

- Judicial Hearing in Columbus – Not the same format as a local public hearing.
- Judicial Scrutiny Applies – Follow Rules of Evidence, presentation of formal testimony and witnesses, all activities open to examination, memorandum contras and cross examination.
- All Parties of First Record have right to participate in the process.




## Regulatory Process

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Motion for Rehearing – Formal Appeal Process, Ohio Revised Code Section 4903.10

- Eligible Parties – Parties of First Record. Any party who has entered an appearance in person or by counsel in the proceeding.
- Leave to file an application for rehearing shall not be granted to others unless the Commission finds the failure was due to just cause, or their interests were not adequately considered in the proceeding.




## Regulatory Process

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Complaint Resolution Process - Ohio Revised Code Section 4906.9

- The board shall require an evidentiary hearing on the alleged violation. The hearing may include evidence on corrective action, forfeitures, and other remedies.
- The complaining party shall have the burden to prove the occurrence of the violation by a preponderance of the evidence.




## Regulatory Process

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Complaint Resolution Process - Ohio Revised Code Section 4906.9

- If the board finds that a violation occurred, it will order appropriate remedies: order ceasing the violation; certificate Suspension; order corrective action and completion date and assess additional forfeitures .
- Direct the Ohio Attorney General to seek appropriate remedies, in local, state or federal court.





## Planning and Involvement

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### Discussion and Outreach

Coordinated efforts involving the developer, government and regulatory agencies at the township, county, state and in some cases, federal level, economic development and regional development authorities community groups.

## Planning and Involvement

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### Action


Creation and development of utility scale and on-site projects that address environmental concerns considers aesthetic needs and provides economic benefits.




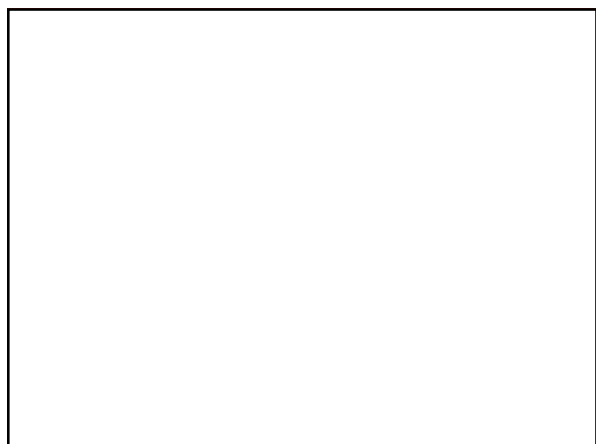

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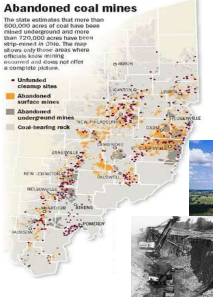


## Land Use Considerations

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### Abandoned coal mines

The state estimates that more than 800,000 acres of coal have been mined underground and more than 100,000 acres have been strip-mined in Ohio. The state estimates that 100,000 acres of abandoned coal mines are still active and offer economic development opportunities.

- Unfilled drainage area
- Abandoned surface areas
- Abandoned underground mines
- Coal leaching risk

ECONOMIC GROWTH

