Cadence Solar Energy Center

Virtual Public Information Meeting

December 18, 2020

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Agenda

- Invenergy Introduction
- Description of Project
- Project Schedule
- Project Components and Facilities
- Project Map
- Project Studies
- Community Engagement & Impacts
- Ohio Power Siting Board Review and Certification Process
- Contact Information
- Q&A

Invenergy Introduction

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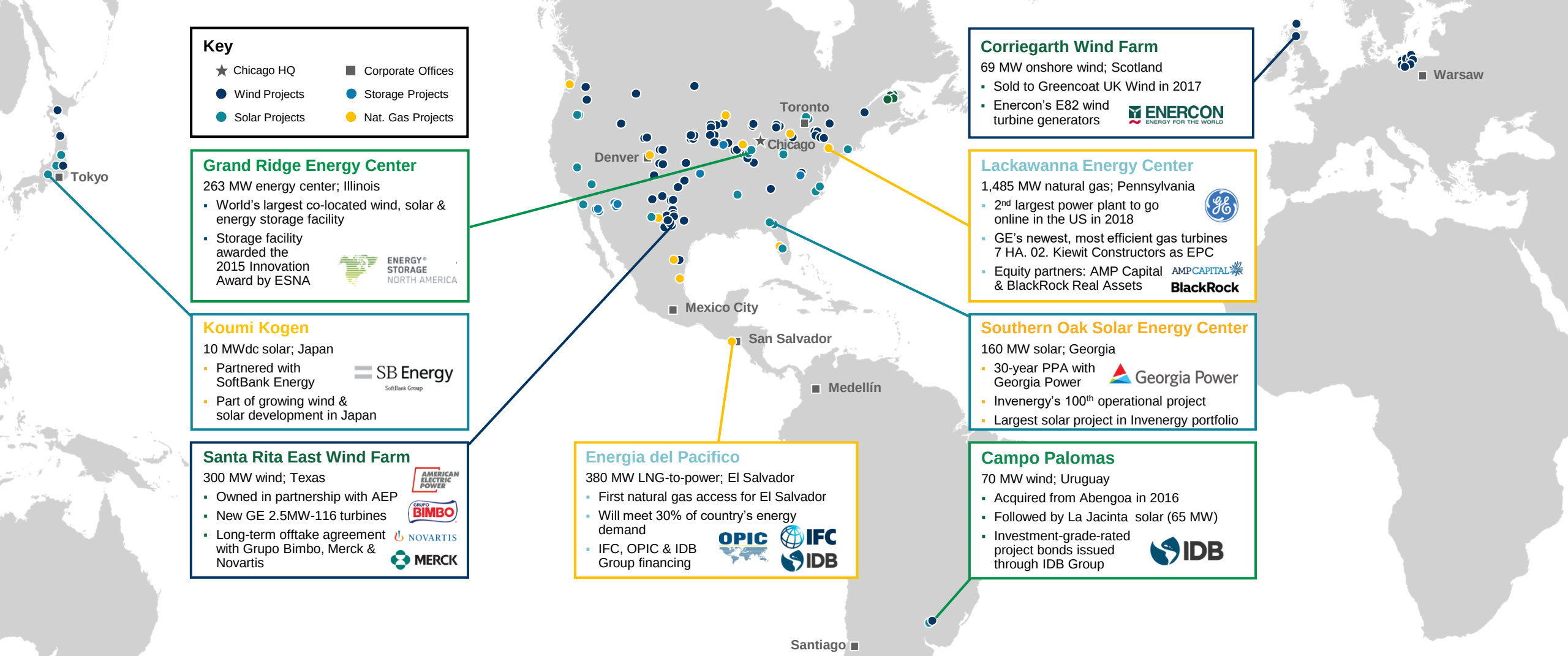
Team Introduction

- **Development**
  - Michael Kaplan – Vice President, Renewable Development
  - Ryan Van Portfliet – Manager, Renewable Development (Ohio Lead)
  - Erin Saal – Senior Analyst, Renewable Development (Project Lead)
- **Environmental Compliance and Strategy**
  - Brad Romano – Senior Manager, Environmental Compliance and Strategy
  - John Wojcikiewicz – Senior Associate, Environmental Compliance and Strategy
- **Engineering**
  - Emily Paice – Senior Manager, Renewable Engineering
  - Emily Baughman – Senior Staff Engineer, Renewable Engineering



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165
Projects Developed

25GW
Capacity Developed

$37Bil+
Completed Transactions

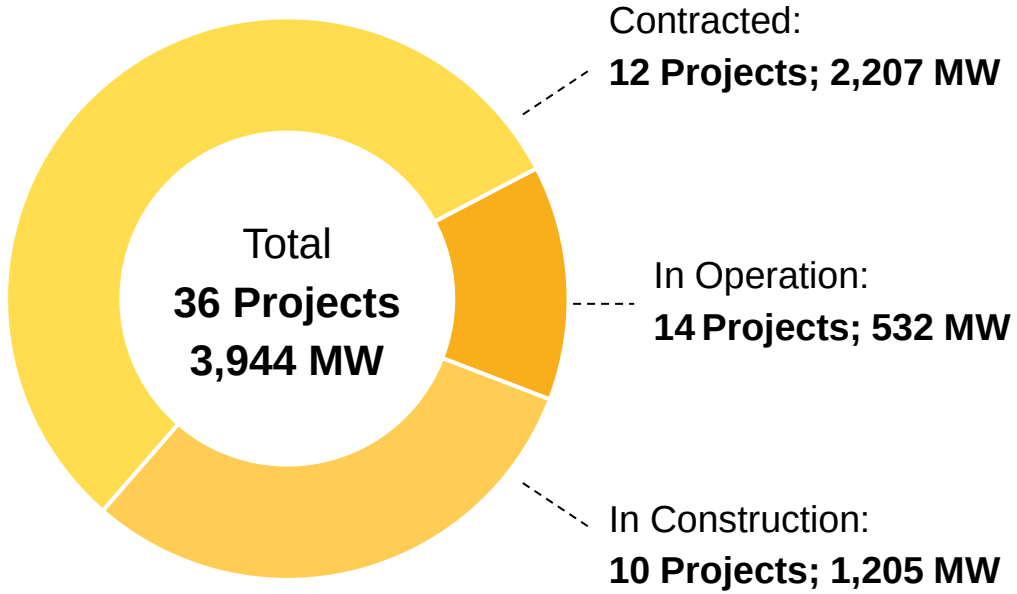
7.8Mil
Homes Powered

8.2Mil
Cars off the Road Equivalent

Invenergy Solar Experience

- **Harnessing the sun since 2012 to deliver low-cost renewable energy**
- **Experience including**
  - Serving utility, public power, and corporate customers
  - Structures including PPAs and build/development-transfer
- **Meeting growing demand for solar with:**
  - Technology innovation
  - Relationships with Tier 1 suppliers
  - Unparallel project execution
  - Safe & reliable operations

Invenergy Solar Portfolio



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Invenergy's Experience In Ohio

11+ Years of Experience Developing Renewable Energy Projects in the Buckeye State

- **Hardin Solar I**
  - 150 MW Project located in Hardin County, OH
  - Approved OPSB Certificate - February 15, 2018
  - Nearing completion of construction
    - Logged 3,000,000+ Construction Manhours from Ohio residents
  - Commercial Operations no later than 12/31/2020
- **Hardin Solar II**
  - Proposed 170 MW Project located in Hardin County, OH
  - Approved OPSB Certificate - May 16, 2019
- **Vinton Solar**
  - Proposed 125 MW Project located in Vinton County, OH
  - Approved OPSB Certificate - September 20, 2018


COLUMBUS BUSINESS FIRST

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Local, state & federal resources to help deal with the coronavirus ›

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Energy

State approves projects that will create Ohio's two largest solar farms

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Two big solar farm projects have a green light to proceed in Ohio.
T&J FILE PHOTO

By Tristan Navera – Staff reporter, Columbus Business First
Feb 15, 2018, 3:50pm EST

RECOMMENDED

ENERGY
Most Admired CEOs: Sunrun's Lynn Jurich is changing the climate for solar energy (Video)

ENERGY
Bonanza Creek Energy buying Colorado oil competitor in deal valued at $376M

ENERGY
Parent of Avangrid Renewables pledges $88B investment in green energy

"State approves projects that will create Ohio's two largest solar farms" - Columbus Business First, February 15, 2018


The Columbus Dispatch

CORONAVIRUS IN OHIO | 5:00 AM Central Ohio already preparing COVID-19 vaccine plans

Vinton County optimistic about proposed solar-energy project

MOST POPULAR
1 Before mostly mask-less Ohio crowds, Trump asserts COVID-19 'affects virtually nobody'
2 Downtown Columbus bar cited for COVID violation
3 Ohio's positive COVID-19 test rate drops to lowest level of pandemic
4 Unlike 2016, Ohio's Rob Portman now backs Senate vote on Supreme Court nominee

BUY PHOTO | HIDE CAPTION

Chicago-based Invenergy proposes to build a solar energy farm in Vinton County on 2,200 leased acres of reclaimed strip-mined land currently used as a cattle pasture. [Dispatch photo]

"Vinton County optimistic about proposed solar-energy project" - Columbus Dispatch, September 11, 2017

Sponsorship at the Vinton County Fair, July 2017

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Cadence Solar Energy LLC

- **Cadence Solar Energy LLC (Cadence Solar) is a wholly-owned subsidiary of Invenergy Solar Development North America LLC (Invenergy).**
- **Preliminary diligence of the site began in early 2018.**
  - Analysis of Available Transmission Capacity (ATC).
  - Review of land surrounding transmission infrastructure.
- **Entered PJM queue in March 2018.**
- **Signed first real estate agreement in June 2018.**

Description of Project

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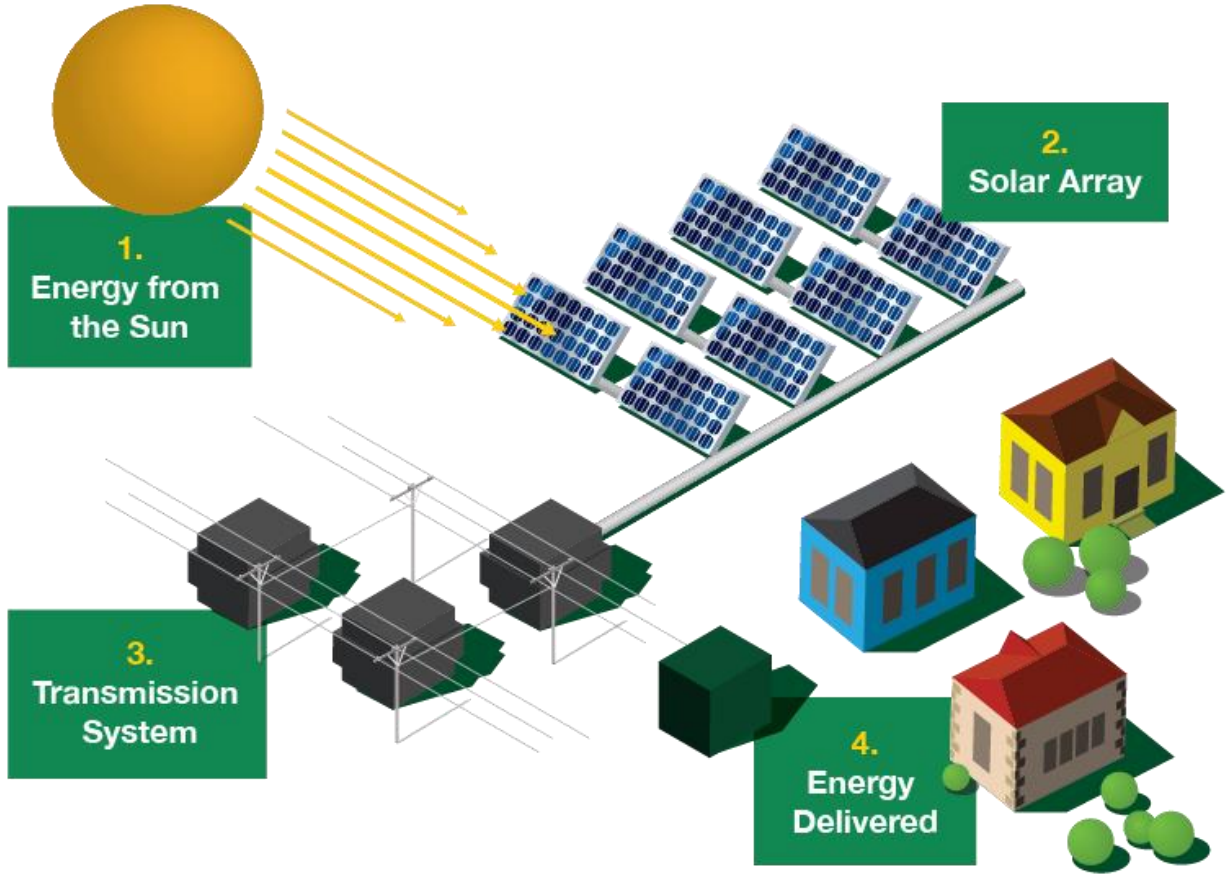
How Solar Facilities Function

Proven Technology

Innovative Design

Year-Round Sunlight



Invenergy uses **state-of-the-art photovoltaic (PV) panels to** harness the sun's energy. Nearby transmission infrastructure will deliver energy to the grid.

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Cadence Solar Energy Center

- **The Cadence Solar Energy Center (Project) is a 275 MW solar-powered electric generation facility located in York, Liberty, and Taylor Townships, Union County, Ohio.**
  - The Project is sited approximately 10 miles northwest of Marysville.
- **The Project's point of interconnection is the Marysville 345 kV substation.**
- **The Project represents Invenergy's commitment to continued investment in Ohio utility scale solar generation projects.**

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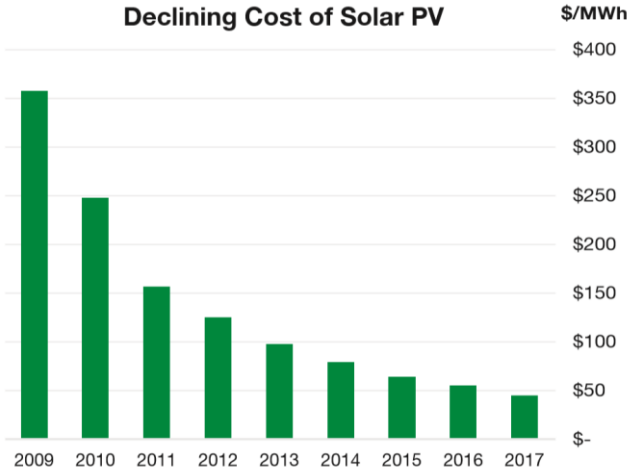
Smart Columbus Introduces Renewable Energy Procurement for Large Columbus Region Energy Buyers

Cardinal Health, Huntington and AEP sign on as first customers to buy Ohio-based clean energy from Smart Columbus Energy, powered by AEP Energy

Why Ohio?

- **Cost Competitive Technology**
  - Solar technology is simple and scalable; its flexible and reliable. With costs that have decreased by nearly 90% in less than a decade, solar is now one of the least expensive and fastest growing sources of new energy generation in the world.
- **Commercial and Municipal Demand**
  - City of Columbus – Proposed Electric Service Aggregation Program (Ballot Issue 1)
  - Smart Columbus Energy- Aggregation for local large corporate and industrial organizations that consume approximately 5,000MWh or more per year.
  - Nationwide Commercial & Industrial Users
- **Decarbonization goals from utilities like American Electric Power (AEP)**
  - Renewable projects and relationship to carbon emission free energy generation. Cleaner air/water.



Source: Lazard Report, 2017

GOVERNMENT

Columbus voters approve green-energy aggregation plan

Bill Bush

Published 10:48 p.m. ET Nov. 3, 2020 | Updated 11:28 a.m. ET Nov. 4, 2020

The Columbus Dispatch

AEP's Carbon Emission Reduction Goals

70% by 2030

80% by 2050

(both from a 2000 baseline)

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Project Schedule

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Schedule

Development Timeline

2018 - 2022	2022 - 2023	Q4 2023
Development Activities include permitting, environmental and interconnection studies, and public feedback	**Construction** Groundbreaking, construction, inspections and QAQC, Final commissioning and certification	**Operations** Operations and continuous Maintenance of equipment and the land.

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Operations / Decommissioning

- **The operational life of the facility is expected to be at least 35 years.**
  - Activities during operations include landscape and vegetative management, equipment monitoring and inspections, and project area security.
- **The owner of the facility will be responsible for decommissioning the facility at the end of its operational life, as required by the conditions put forth by the Ohio Power Siting Board.**
  - A bond or other financial security will be put into place prior to the commencement of construction to ensure that sufficient funds are available for decommissioning.
  - Decommissioning involves the removal of equipment and the reclamation of the land.

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Project Components and Facilities

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Bi-facial Solar Modules

- **Innovative design; proven technology.**
- **Solar panels are made of glass, aluminum, copper and other common materials.**
- **Solar panels are safe to touch, attach to your home or install in your neighborhood. Solar panels have been attached to houses, hospitals and airports for decades.**
- **While there are different kinds of solar panels, the most common are made of silica – the second most abundant element on earth after oxygen. The faces of silica panels are similar in substance to standard household glass.**
- **Cadence Solar will utilize panels that will pass the EPA's Toxicity Characteristic Leaching Procedure (TCLP) test.**

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Single-Axis Tracking System

- Follows the sun throughout the day to harness energy at the optimal angle.
- The Project will likely utilize a ‘2 in portrait’ configuration.
- Accommodates variation in ground cover plant species and allows for additional agricultural features.
- Approximately 15’ total height profile at most extreme tracking position.

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Other Components & Design

- **The Project will also include associated support facilities such as access roads, meteorological stations, buried electrical collection lines, inverters, and a collection substation.**

- **An above-ground transmission line will be built to connect the collection substation to the point of interconnection, the Marysville 345 kV substation.**

- **Conceptual engineering designs are underway and more detailed designs will be developed by professional engineers prior to construction.**

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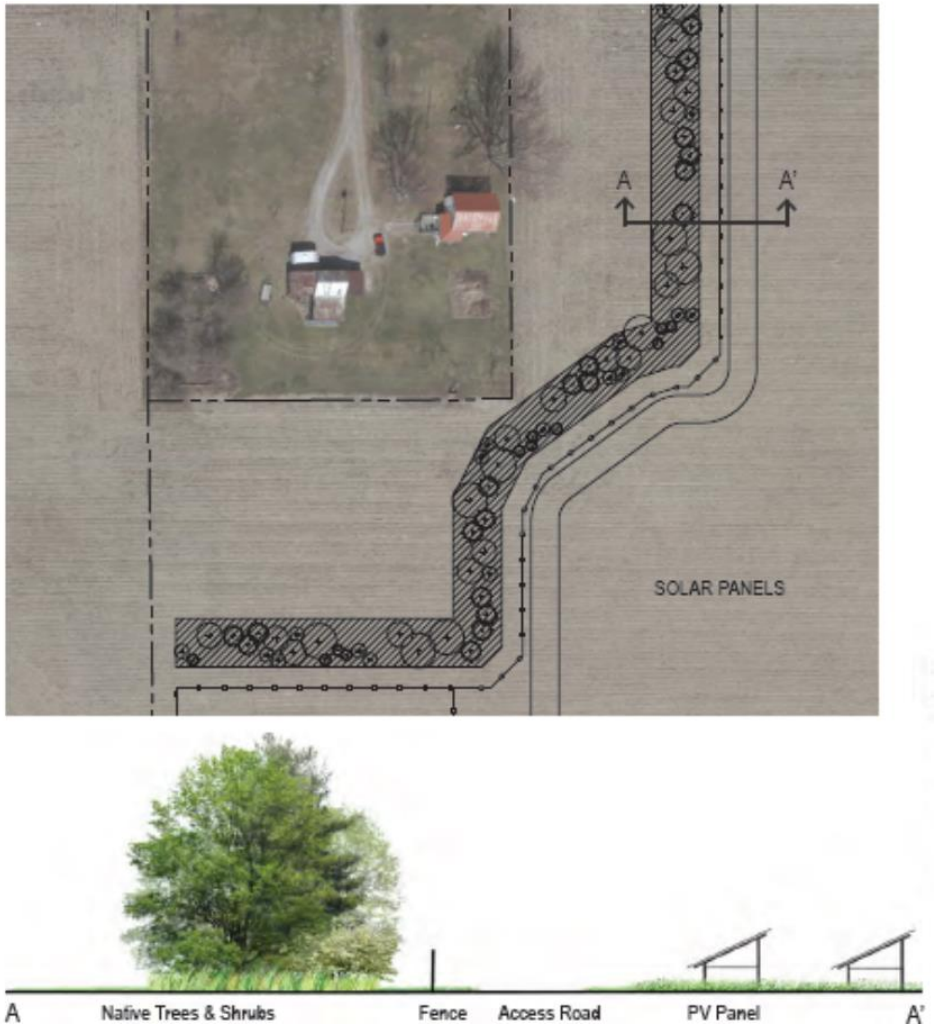
Project Components and Facilities

- **The project is undergoing the design and review of a vegetative management and landscaping plan.**
  - The vegetative management plan will dictate how/where/what plantings will be placed under the solar panels, as well as how those plantings are to be monitored and maintained to ensure there are no project issues with drainage, invasive species, and mowings or clearings.
  - The landscape plan dictates how/where/what aesthetic plantings will be placed near and around the project area. There are typically multiple configurations of planting ‘treatments’ that can be utilized to achieve appropriate viewsheds of the project and project area.



EXAMPLE CONDITION

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Project Map

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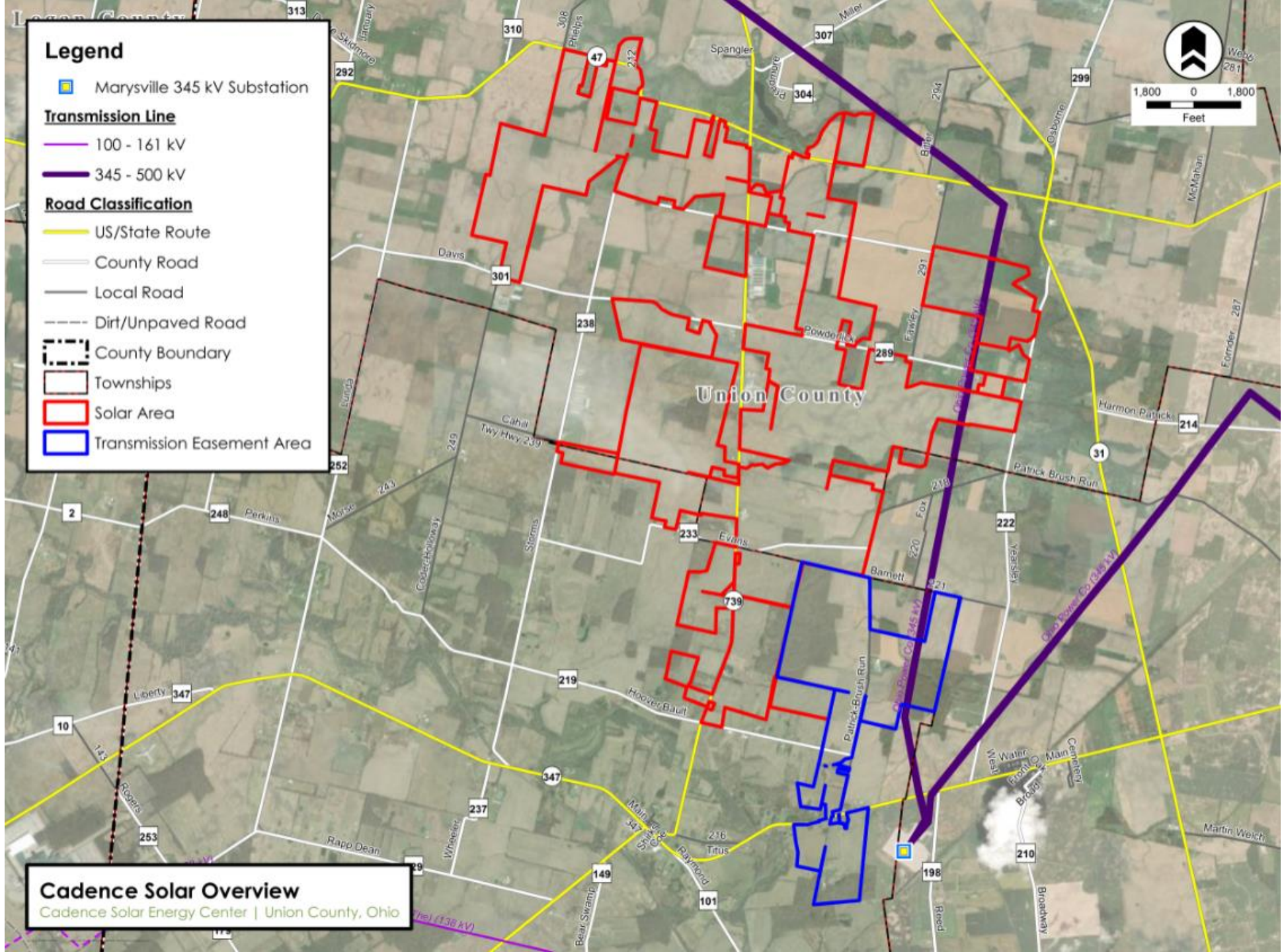
Legend
Marysville 345 kV Substation
Transmission Line
100 - 161 kV
345 - 500 kV
Road Classification
US/State Route
County Road
Local Road
Dirt/Unpaved Road
County Boundary
Townships
Solar Area
Transmission Easement Area
1,800 0 1,800
Feet
Union County
Cadence Solar Overview
Cadence Solar Energy Center | Union County, Ohio

Project Studies

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Project Studies

The following studies help inform and advance Project design, incorporate avoidance of sensitive environmental resources, and ensure a high degree of environmental stewardship for the Project area.

- Ecological Site Characterization Study
- Wetlands and Waterbodies Delineation
- Vegetative Management and Landscaping Plan
- Applicable wildlife surveys based on consultations from ODNR and USFW
- Phase I Environmental Site Assessment

Project Studies- Continued

The following studies inform the design of the Project from a land use and socioeconomic perspective. These studies can help create value for the local community.

- Phase I Cultural Resources Investigation
- Viewshed Analysis and Aesthetic Resources Inventory
- Road Survey and Conceptual Traffic Plan
- Decommissioning Plan
- Economic Impact Analysis
- Drain Tile Mapping
- Noise Impact Study
- Property Value Study

Project Studies – Continued

The following studies inform and advance Project design from an engineering perspective.

- Full Geotechnical Testing (pile load tests and cone penetration tests)
- Hydrology Study
- Topography and aerial imaging

Community Engagement and Impacts

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Our Invenergy Impact

$216 million

Total 2018 local economic investment in wages & benefits, lease payments, and state & local taxes

$1.2 million

Given to different cause-based organizations in 2019, focusing on veterans, education, emergency services & environmental stewardship

10% veterans

Percent of Invenergy's U.S.-based workforce who are military veterans or reservists

ORACLE

Sustainability Innovation Award

Awarded by Oracle to Invenergy in 2017 for sustainability leadership

Proud to Support

Four Star Sponsor

First sustainable power developer & operator to sponsor National FFA (Future Farmers of America formerly)

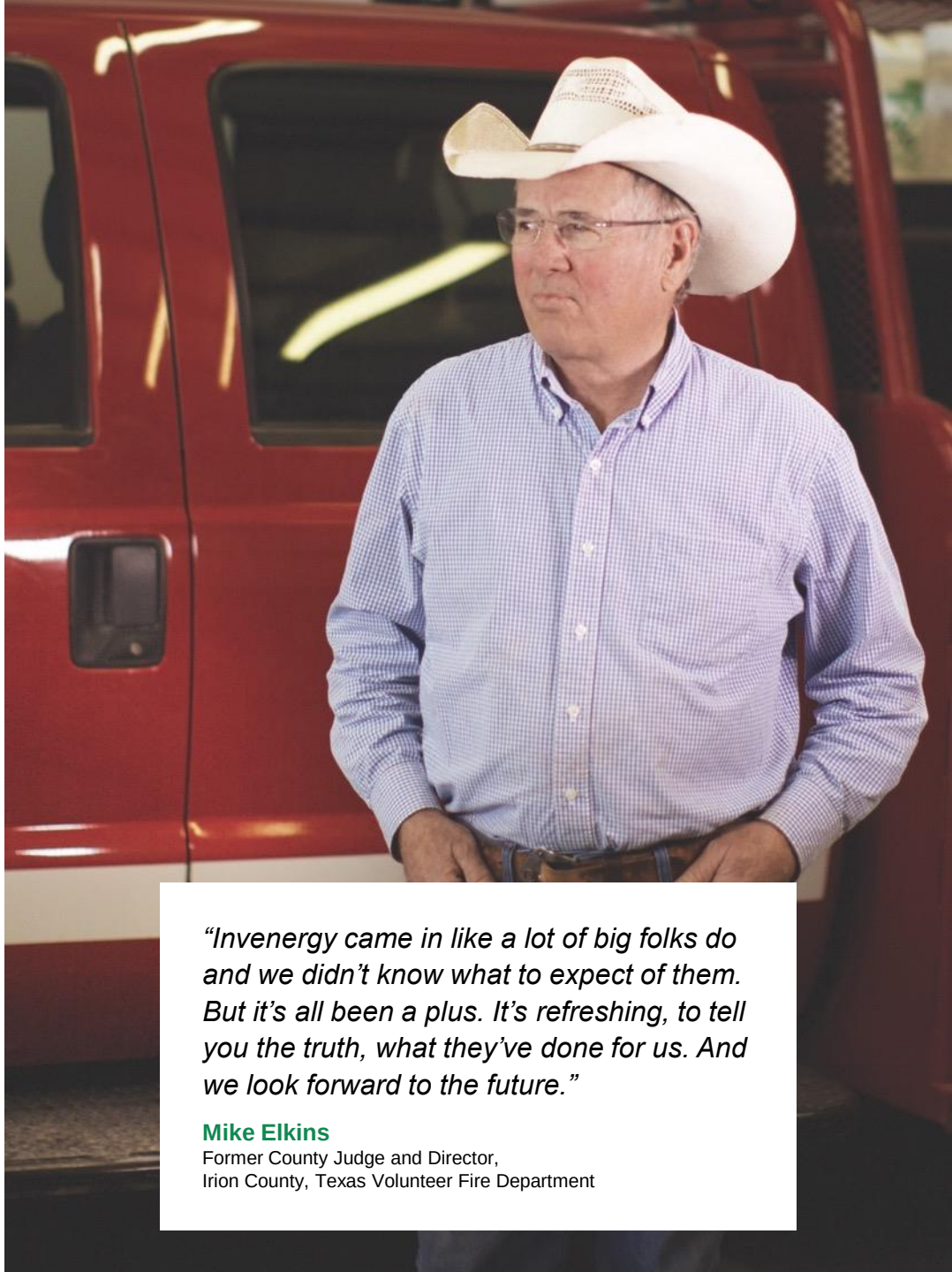
TAMARINDO
strategic communications advisory

#1 Renewables Reputation

Top brand reputation among 1,500 companies active in the North American renewables market

HIRE Vets Gold Medallion

Recognized in 2019 by the US Department of Labor for commitment to hiring veterans



"Invenergy came in like a lot of big folks do and we didn't know what to expect of them. But it's all been a plus. It's refreshing, to tell you the truth, what they've done for us. And we look forward to the future."

Mike Elkins
Former County Judge and Director,
Irion County, Texas Volunteer Fire Department

Measuring the Economic Impacts of Utility Scale Solar in Ohio

Conducted by the George V. Voinovich School of Leadership and Public Affairs at Ohio University

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One-Time Construction Phase Impacts

Total Jobs

- 18,039
- 36,074
- 54,113

Total Economic Impacts

- $3.2B
- $6.4B
- $9.6B

Deployment Scenarios

- Low (2.5 GW)
- Moderate (5 GW)
- Aggressive (7.5 GW)

* All calculations assume 80% of labor and 30% of materials originate in Ohio.

Annual Operations Phase Impacts

Total Jobs

- 207
- 413
- 618

Total Economic Impacts

- $54M
- $107M
- $160M

Tax Revenues (PILOT)

- $23M
- $45M
- $68M

Total Homes Powered

- 503K
- 1M
- 1.5M

Aggregate Lifespan Operations Phase Impacts

Lifespan = 40 Years

Total Economic Impacts

- $2.2B
- $4.3B
- $6.4B

Tax Revenues (PILOT)

- $900M
- $1.8B
- $2.7B

In the aggressive (7.5 GW) deployment scenario, the energy produced could power all of the households in Columbus, Ohio roughly **four** times over.

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Cadence Solar Energy Center

The Cadence Solar Energy Center is a proposed solar power generation facility of up to 275 megawatt (MW) in Union County, Ohio, targeted to begin operating in 2023. Solar technology uses the power of the sun to deliver clean, renewable energy and is now one of the lowest-cost energy sources available.

Development Timeline

Enough sustainable energy to power **44,634 American homes**

An estimated **$141 million** invested in Union County through new taxes and landowners' payments over the life of the project

An estimated **700 construction jobs** supported during peak construction

Up to **3 full-time operations and maintenance jobs** created once operational

Emissions reductions equivalent to taking **48,923 cars off the road**

Supports local education, emergency & veteran services and environmental stewardship

Uses the most up-to-date, innovative technology

Up to **275 megawatts** of sustainable energy

Municipal / County Expected Annual Payment Distributions

- **Based on preliminary design and county tax levy rates, this table shows a baseline approximation/minimum of the annual municipal and county payments that could be made by the Project.**
- **Other and/or additional payments are possible as this is just a baseline approximation.**
- **Based on the total number of acres under lease, approximately 70% of the project area is located in York Township, and 30% is located in Liberty Township.**
  - The acreage in Taylor Township represents less than 0.3% of the project area.

	York Township	Liberty Township	Total
Local School District	$841,776.82	$372,728.93	$1,214,505.75
Union County	$610,852.80	$221,750.56	$832,603.36
Fire Department	$161,824.68	$52,721.92	$214,546.61
Vocational Schools	$68,377.38	$15,665.94	$84,043.32
Township	$54,416.78	$8,435.51	$62,852.28
Health District	$26,270.17	$8,435.51	$34,705.68
Library	$22,704.96	$9,038.04	$31,743.01
Total			**$2,475,000**

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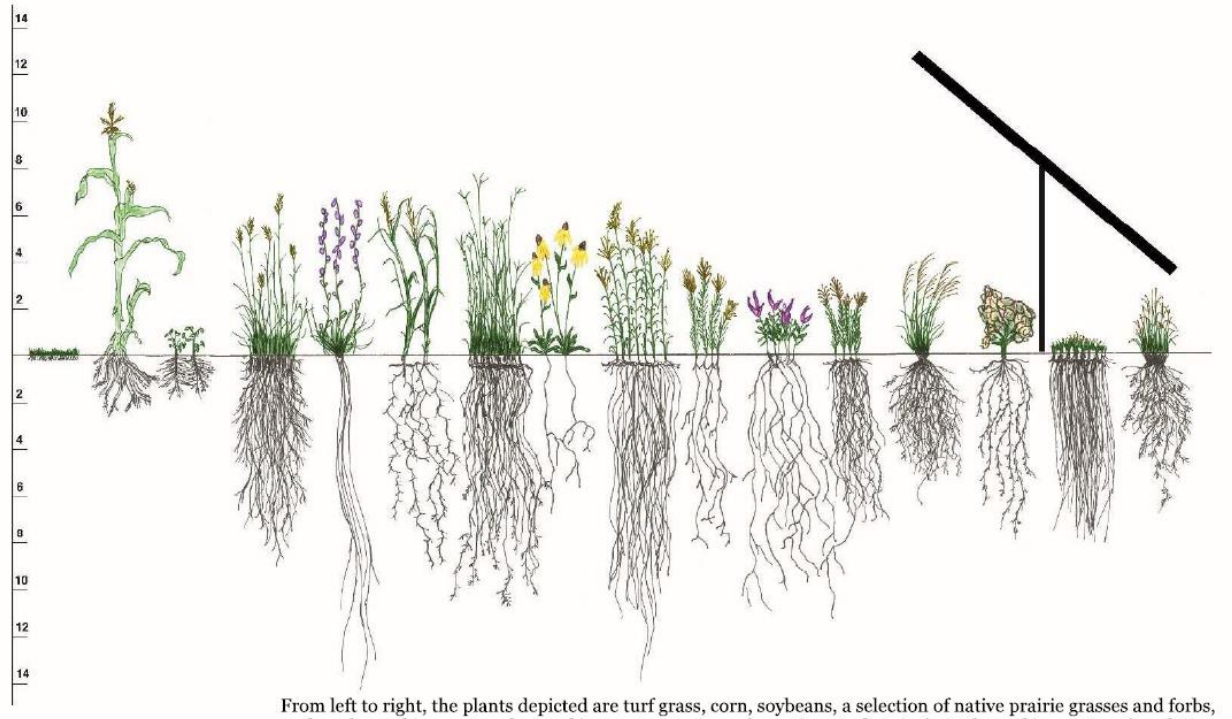
Benefits of Vegetation Management Approach

- **Soil/planting diversity and health**
- **Improvement in stormwater drainage through diversified plantings and long rooted systems that can reduce soil erosion**
- **Reduction or elimination of annual soil tilling**
- **Improvement in downstream water quality through the reduction or elimination of fertilizer use**
- **Can help increase pollinator habitats**



From left to right, the plants depicted are turf grass, corn, soybeans, a selection of native prairie grasses and forbs, and a solar racking system depicted in a 2x1 portrait configuration. Scale is in feet. The racking system foundation will go below grade, but a final depth has not yet been determined so it is omitted from this illustrative figure.

Figure 2: Selected Native Plant Rooting Depths and Growth Heights

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Involvement in Union County

- **Local Outreach**
  - Mailings
  - Door-to-Door Efforts (w/ social distancing protocol)
    - ~200 doors knocked
  - Online Engagement (via Project website)
  - Phone Call Efforts

- **Community Engagement**
  - Union County Commissioners
  - Union County Engineer
  - Union County Chamber of Commerce
  - York Township Trustees
  - Liberty Township Trustees
  - Taylor Township Trustees
  - North Union High School
  - Tolles Career and Technical Center

OPSB Review and Certification Process

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Ohio | Power Siting Board

Ohio | Public Utilities Commission

OhioEPA Ohio Environmental Protection Agency

Ohio Department of Agriculture

Ohio | Development Services Agency

Ohio Department of Health

OPSB Role

- Before any company can build a “major utility facility,” the OPSB assures that it benefits Ohio’s citizens, promotes the state’s economic interests, and protects the environment and land use.

- Public and local government participation are strongly encouraged, but decision-making authority rests with the OPSB.

- If approved, the OPSB issues a certificate for the construction, operation, and maintenance of the facility.

OPSB Jurisdiction

Electric Generation

Solar farms
50 MW and greater

Wind farms
5 MW and greater

Fossil fuel plants
50 MW and greater

Electric Transmission

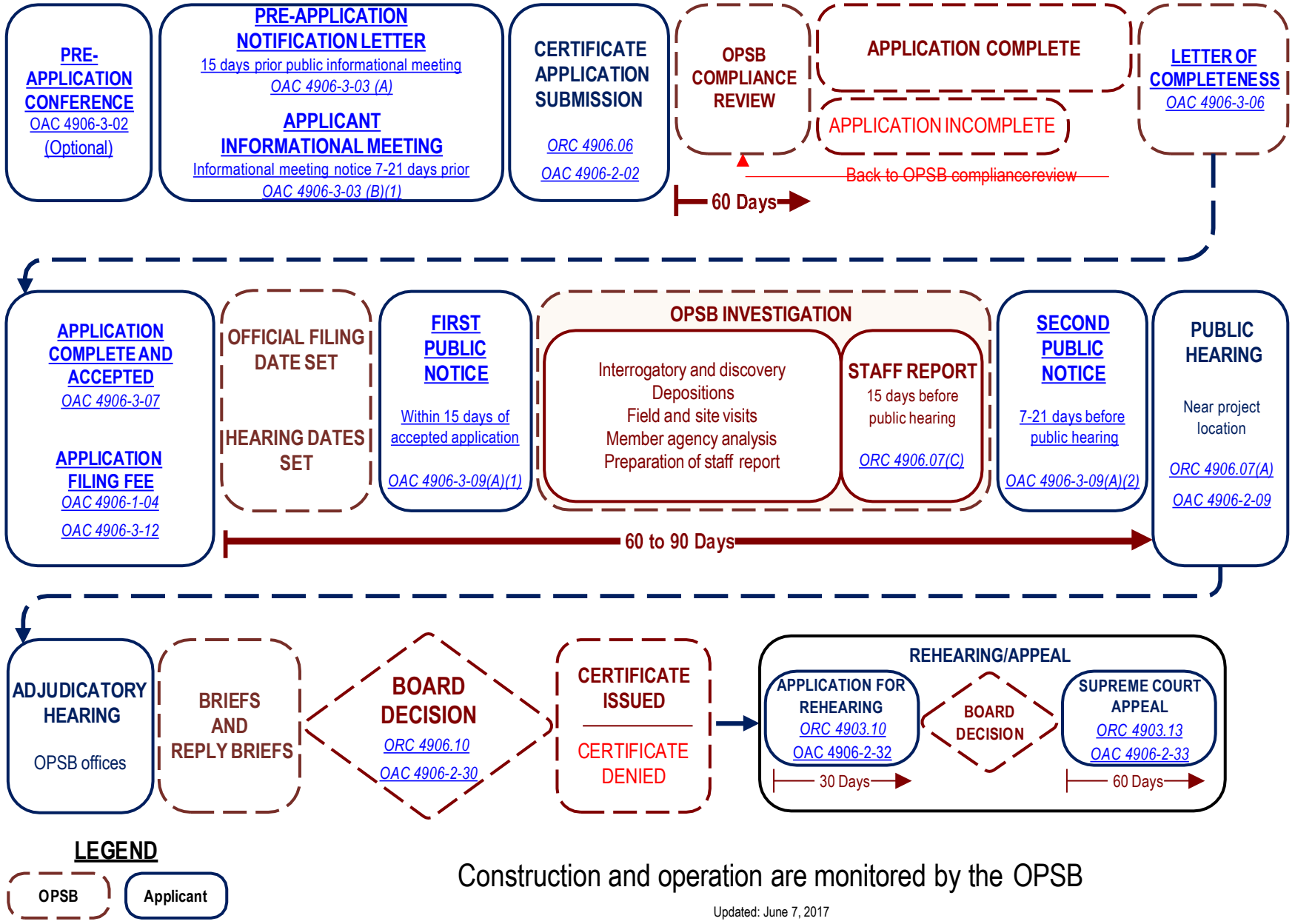
Lines and associated facilities 100 kV and greater

Natural Gas Transmission

Pipelines greater than 500 feet in length and 9 inches in diameter

Maximum operating pressure greater than 125 psi

Ohio Power Siting Board



Construction and operation are monitored by the OPSB

Updated: June 7, 2017

How to Participate

Public informational meeting

Developer educates community about project and gathers input to consider in developing its application. OPSB representatives provide info about siting process and public participation.

Public comments

Written comments are filed in the case where they inform the Board members and staff. Comments are accepted at any time after a case number is established.

Online: OPSB.ohio.gov

Email: contactOPSB@puco.ohio.gov

Mail:

Ohio Power Siting Board

180 E. Broad Street

Columbus, Ohio 43215

Local public hearing

Board obtains sworn statements from the public which are transcribed and become part of the official record that the Board considers before making its decision.

Held at least 15 days after staff publishes its report of investigation. Notification letters sent to property owners and local officials. Newspaper notice 7-21 before the hearing.

Adjudicatory hearing

The developer, OPSB staff, and parties to the case present testimony and evidence regarding the facility and cross examine each other. Intervention grants individuals and local governments the right to participate as a party in the adjudicatory hearing, file for rehearing, or appeal to the Supreme Court of Ohio.

Held approximately 2 weeks after the local public hearing. Property owners and local officials receive letters advising them of right to intervene.

Construction & Operation

- If a project is approved, the OPSB monitors construction and operation to ensure compliance with the certificate and any conditions.
- The developer must notify landowners prior to start of construction.
- The developer must establish a complaint resolution process to address concerns resulting from project construction and operation.
- OPSB can assist individuals who feel they are not obtaining a resolution from the developer.

Stay in Touch

OPSB Website

OPSB.ohio.gov

- Case summary page
- Process information
- Calendar of events

Docketing information system

dis.puc.state.oh.us

- View case documents and public comments
- Subscribe for case notifications

contactOPSB@puco.ohio.gov

866-270-6772

The Ohio Power Siting Board

180 East Broad Street

Columbus, Ohio 43215

Applicant Contact Information

Invenergy

Applicant Contact Information

For further information about the Cadence Energy Center, please contact us at:

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https://cadencesolar.com

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c/o Invenergy LLC

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We’re building a sustainable world.

Join us.