



# CLEAN ENERGY BOOM

*What is the impact on your MS4  
community?*



# Professional Introductions:

## ALAN SUTKOWSKI:



- President of D2 Land and Water Resource
- Certified Professional in Erosion and Sediment Control (CPESC)
- Member of International Erosion Control Association Erosion

## JOE MOORE:



- Founder of Siltworm Inc and Erosion and Construction Services
  - Member of IECA
- Erosion Control Technology Council: Materials
  - Treasurer Indiana MS4 Partnership
  - NISWAG Member

*Passionate Outdoorsmen/Stewards of  
Clean Land and Water*

# WHY ARE WE HERE?

1. What is driving the Clean Energy Boom
2. Development Best Practices and Opportunities
3. Where to Focus Your Resources

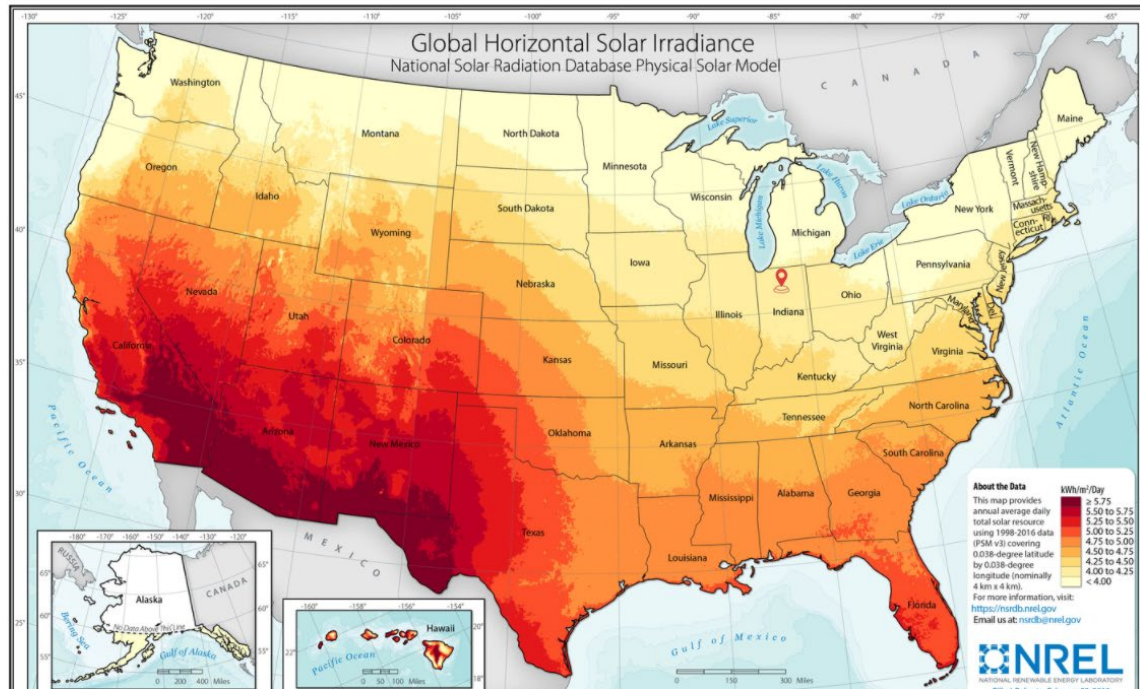


PRESENTATION GOAL: UNDERSTANDING THE WHY AND THE HOW. REACHING CLEAN SUSTAINABILITY TOGETHER. Wind. Solar. Hydro.



## Northern Indiana is the 11th worst state for solar energy in the U.S.

(Typically Indiana only has 88 days of sunlight per year)



## Why Indiana?

PRESENTATION GOAL:

UNDERSTANDING THE WHY  
AND THE HOW. REACHING  
CLEAN SUSTAINABILITY  
TOGETHER.

Wind. Solar. Hydro.

# PART 1: What is Driving the Boom in Indiana?



Cost  
Reductions

Corporate  
Emphasis

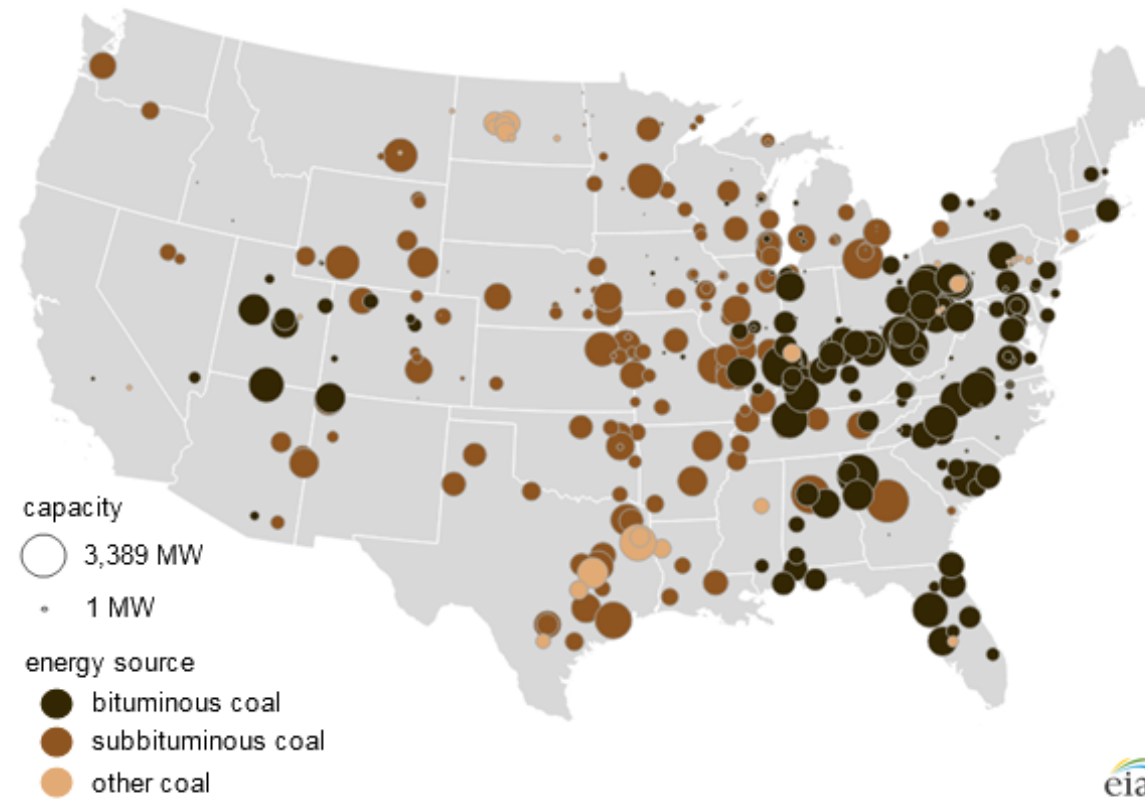
Government  
Incentives

Aging  
Infrastructure

Public  
Emphasis

# Aging Infrastructure

Distribution of coal plants in the Lower 48 states



Source: U.S. Energy Information Administration, *Preliminary Monthly Electric Generator Inventory*  
Note: [Click to enlarge](#).



# Cost Reductions

- IN THE LAST TEN YEARS
  - Solar and Battery costs are down 90%
  - Wind cost are down 70%
- Increase in demand=and increase in competition=increase in technology advances and a decrease in costs



# Aging Infrastructure

- 88% of Coal fired furnaces built between 1950-1990
- 1990 was 31 years ago
- INDIANA: Heavy in Coal





# Government Incentives

- Biden Administration: 80% of US Power to come from clean sources by 2030
- Currently at 20%
- Required Year over year growth of appx 10%

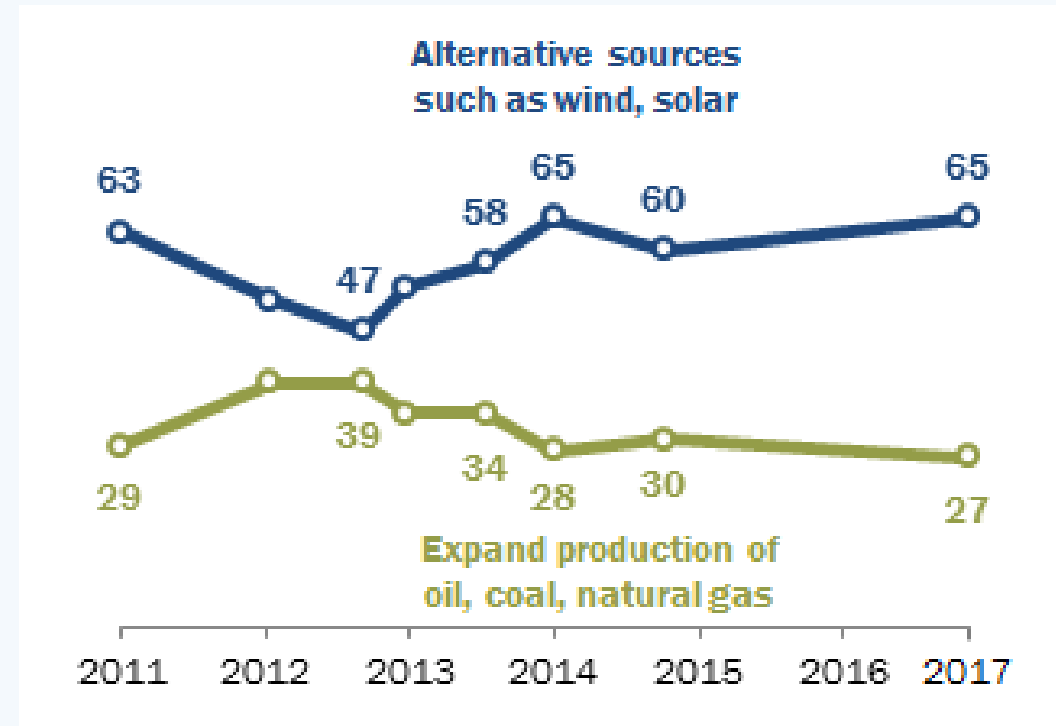
What about 2050?



# Corporate/Public Emphasis (the power and result of education)

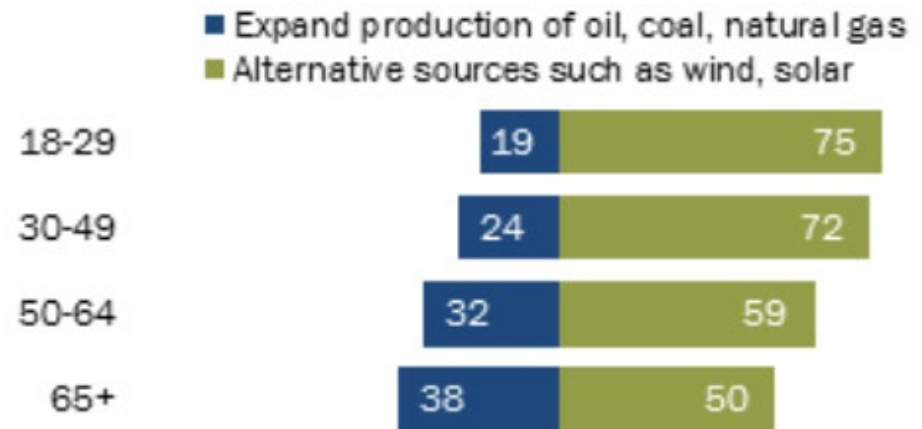
- 2/3 or Americans give priority to developing renewables over fossil fuels

*\*Younger Generations are focused on Clean Energy.*



# Corporate/Public Emphasis (the power and result of education)

- Younger Generations are focused on Clean Energy
- All Age Groups see Clean Energy as the path Forward
- Finally We all agree!





# WHO IS BOUGHT IN ?

<i>NiSource</i>	<i>Duke</i>	<i>AEP</i>	
<i>Solar</i>	<i>Solar</i>	<i>Solar</i>	✓
<i>Wind</i>	<i>Wind</i>	<i>Wind</i>	✓
<i>Hydro</i>	<i>Hydro</i>	<i>Hydro</i>	✓



# DUKE ENERGY

2020 Sustainability Report:

<https://sustainabilityreport.duke-energy.com/downloads/2020-Duke-Energy-Sustainability-Report-Complete.pdf>

# Duke Energy – The Push

## SO FRESH/SO CLEAN

- Largest coal closure in the energy industry. Will shorten average COAL PRODUCTION retirement dates by 40% in Indiana.
- Currently have 8.8 GW of renewable energy nationally with plans to double that by 2025 and triple by 2030.
- In Indiana: Handfull of projects
- Nationally, much lower emissions goals and % clean energy generation.





# AEP

2021 Sustainability Report:

<https://aepsustainability.com/performance/report/docs/2021AEPsustainabilityReport.pdf>

# AEP – The Shove

## SO FRESH/SO CLEAN

- “Committed to transitioning to clean energy as fast as we can, without compromising reliability, affordability, or the security of the electric power system.”
- 80% carbon emission reduction by 2030, net-zero by 2050
  - 16,600 MW of new clean wind and solar by 2030
  - Renewables will be 51% of total capacity by 2030
  - 72% of capital investments will be allocated to modernize the energy grid from 2021 to 2025
  - Will retire 5,574 MW of coal generation from 2021 to 2030.
  - Emphasis in this section on “reliability, affordability, and resilience”

# AEP – The Shove

## SO FRESH/SO CLEAN

- By 2030 will reduce our coal-fueled generating capacity by 74% from 2010 levels.
  - \$2.8B in regulated renewable generation and \$2.1B in competitive, contracted renewable projects.
  - See Figure 7 for forecasted mix of future generation
  - P. 46 has a series of lists that shows projected construction in Indiana.
    - Current Indiana Michigan Power renewables capacity: 506 MW
    - Project IMP Solar additions: 900 MW by 2030
    - Projected IMP Wind additions: 800 MW by 2030





# ENVIRONMENTAL

## NiSource

2020 Integrated Annual  
Report:

<https://www.nisource.com/docs/librariesprovider2/sustainability-archives/2020/72731-nis-screen-opt.pdf?sfvrsn=8>

# NiSource – The NEW norm

## SO FRESH/SO CLEAN

- Transitioning to renewables will result in “reliable energy at lower costs for customers and improved environmental performance”
- First two renewable projects completed in late 2020.
- Type of plant and volume: Retire 80% of coal plants by 2023, 100% coal-free by 2028. \$1.8B to 2B invested through 2023, expected to save customers \$4b over 30 years. Model of development: Mix of build transfer agreements and power purchase agreements focused on solar and battery storage.
- \$40B long-term infrastructure and safety investments over 20 years to get to ultimate environmental impact targets

# PART 2: What are the Best Practices and Opportunities for These Sites?



Structural  
BMP Review

Construction  
Phasing

Vegetative  
Restoration

Haul Roads

Non Structural  
BMP Review



# Non-Structural BMP's



## PLAN REVIEW/IMPLEMENTATION

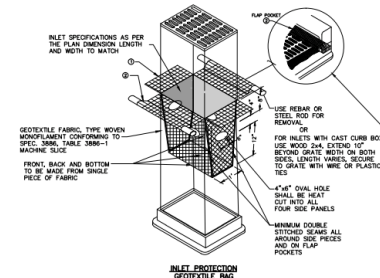
- WHAT CAN BE PROBLEMATIC HERE?
  - Mammoth is 13,000 Acres spanning two counties
- WHO IS DESIGNING IT?
  - IS IT DESIGNED TO IDEM'S REQUIREMENTS?
  - IS IT A CUT AND PASTE?
- WHO IS DOING THE REVIEW?
- WHO IS INSPECTING IT
- IS THERE AN MS4 RESPONSIBLE?
- ARE THERE MULTIPLE MS4'S/SWCD'S

### MN/DOT STANDARD PLATES

THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY

PLATE NO.	DESCRIPTION
3000L	REINFORCED CONCRETE PIPE
4006L	MANHOLE OR CATCH-BASIN PRECAST - DESIGN C & H
4010H	CONCRETE SHORT CONE AND ADJUSTING RING (SECTIONAL CONCRETE)
4011E	PRECAST CONCRETE BASE
4020J	MANHOLE OR CATCH-BASIN FOR USE WITH OR WITHOUT TRAFFIC LOADS
4022A	MANHOLE OR CATCH-BASIN COVER - 20" x 3' R. OPENING
4026A	CONCRETE ENGAGED CONCRETE ADJUSTING RINGS
4101D	RING CASTING FOR MANHOLE OR CATCH BASIN
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4180J	MANHOLE OR CATCH BASIN STEP
7035M	CONCRETE WALK & CURB RETURNING AT ENTRANCES
7036F	PEDESTRIAN CURB RAMP
7111J	INSTALLATION OF CATCH BASIN CASTINGS (CONCRETE CURB AND GUTTER)
7100H	CONCRETE CURB AND GUTTER - DESIGN B & V
8000I	STANDARD BARRICADES

NOTE: 1) CITY OF NORTHFIELD DETAIL PLATES CAN BE FOUND WITHIN THE PROJECT SPECIFICATIONS MANUAL.  
 2) MANHOLE LOCATED IN STREETS SHOULD HAVE A 6"-THICK CASTING.  
 3) PRIOR TO CURB CONSTRUCTION, PERFORATED WALL INLET PROTECTION SHALL BE USED.  
 4) AFTER CURB CONSTRUCTION & ON EXISTING 10% GEOTEXTILE BAG THE INLET PROTECTION SHALL BE USED.

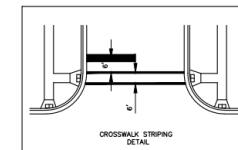
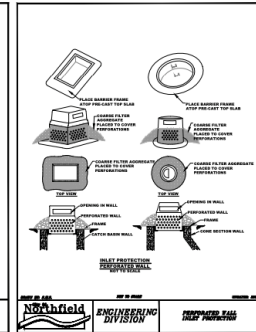
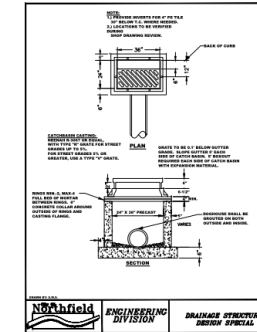


NOTE: INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DISCRETION OF THE ENGINEER. MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED. WHEN REQUIRED OR MANUFACTURED INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL IN THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

① FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED, SHALL EXCEED A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2x4.

INSTALLATION NOTES:  
 DO NOT INSTALL PROTECTION IN INLETS SHALLOWER THAN 24" MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.  
 TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.  
 THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE BETWEEN THE INLET AND THE BAG, MEASURED AT THE BOTTOM OF THE CURB OR HOLES OF 3", WHERE NECESSARY THE CONTRACTOR SHALL CLAMP THE BAG USING PLASTIC ZIP TIES TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MINIMUM OF 4" FROM THE BOTTOM OF THE BAG.



# Non-Structural BMP's



- WHAT ARE THE OPPORTUNITIES TO BE BETTER?
- CAN WE CONTROL A SITE THIS LARGE?
- WILL THE CONSTRUCTOR FOLLOW THE ENGINEERED PLAN?
- WHO IS FULFILLING THE WEEKLY PERMIT REQUIREMENT?
- WHAT DOES SELF-REPORTING LOOK LIKE?

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8000I	STANDARD BARRICADES

NOTES: 1) CITY OF NORTHFIELD DETAIL PLATES CAN BE FOUND WITHIN THE PROJECT SPECIFICATIONS MANUAL.  
2) MANHOLES LOCATED IN STREETS SHOULD HAVE A R-16429 CASTING.  
3) PRIOR TO CURB CONSTRUCTION, REINFORCED WALL INLET PROTECTION SHALL BE USED.  
4) AFTER CURB CONSTRUCTION & ON EXISTING C/S, GEOTEXTILE BAG TYPE INLET PROTECTION SHALL BE USED.

**INLET PROTECTION GEOTEXTILE BAG**

INLET SPECIFICATIONS AS PER THE PLAN DIMENSION LENGTH AND WIDTH TO MATCH

GEOTEXTILE FABRIC, TYPE WOVEN MONUMENT CONTAINING TO SPEC. 5888-1 MACHINE SLICE

FRONT, BACK AND BOTTOM TO BE MADE FROM SINGLE PIECE OF FABRIC

USE REBAR OR STEEL ROD FOR REMOVAL

OR FOR INLETS WITH CAST CURB BOX USE WOOD 2x4, EXTEND 10" BEYOND GRATE, WITH ONE BOTH SIDES, LENGTH Varies, SECURE TO GRATE WITH WIRE OR PLASTIC TIES

4"x4" OVAL HOLE SHALL BE HEAT CUT INTO ALL FOUR SIDE PANELS

MINIMUM DOUBLE STITCHED SEAMS ALL AROUND SIDE PIECES AND ON FLAP POCKETS

NOTES: INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DISCRETION OF THE ENGINEER. MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S PROGRAM CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL IN THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

① PREPARED SIZES, HOLDING POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2x4.

**INSTALLATION NOTES:** TO AVOID INLET PROTECTION IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE BETWEEN THE INLET AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CLUNCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.

**CROSSWALK STRIP DETAIL**

# Non-Structural BMP's

- CHEMICAL STORAGE
  - CAN COMPLETE POLLUTION PREVENTION PRACTICES BE ADMINISTERED?
- LONG TERM VEGETATIVE MAINTNENANCE
  - IS THERE A LONG TERM POSIT CONSTRUCTION PLAN?
- LITTER AND DEBRIS CONTROL
  - WHAT WILL THE NEW PERMIT REQUIRE?
- CAN EXISITNG OR ORIGINAL FEATURES BE INCORPORATED INTO DESIGN?
- DUST CONTROL?
  - WHAT METHODS CAN WE USE?
  - IS IT IMPORTANT?
- WHAT IS DIFFERT ABOUT THESE SITES?
  - MASSIVE AMOUNTS OF TOPSOIL





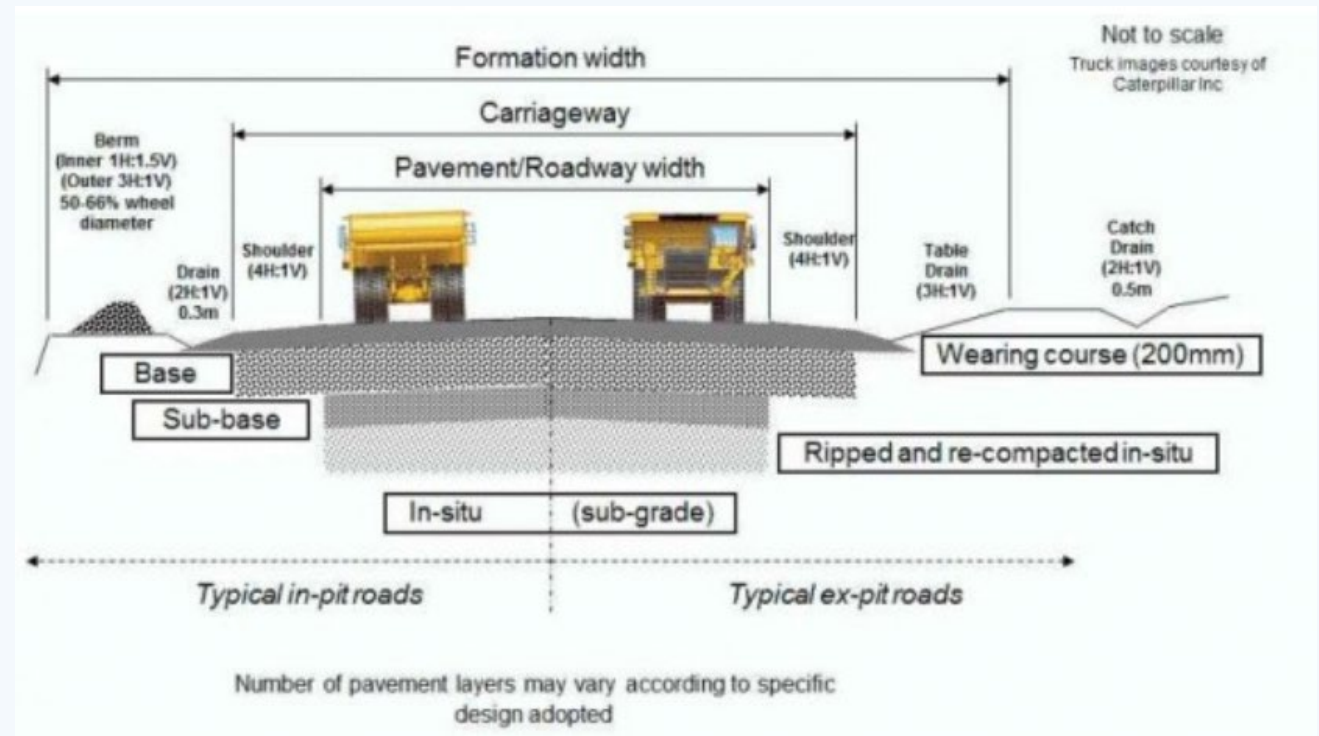
# Rule 5 Permit posting

- NOI
- Rule 5
- Copy of Plan or where to get it
- Any municipal permit
- Placed in obvious location near site trailer or entrance



# HAUL ROADS (DESIGN)

- WHAT HAS THE ENGINEER SPECIFIED?
- WILL IT WORK WITH OUR SOIL CONDITIONS
- WHAT WORKS BEST HERE?
- IS THE OUT OF STATE ENGINEER PRIVY TO THE TECHNOLOGIES USED AND AVAILABLE HERE?



# HAUL ROADS (IMPLEMENTATION)

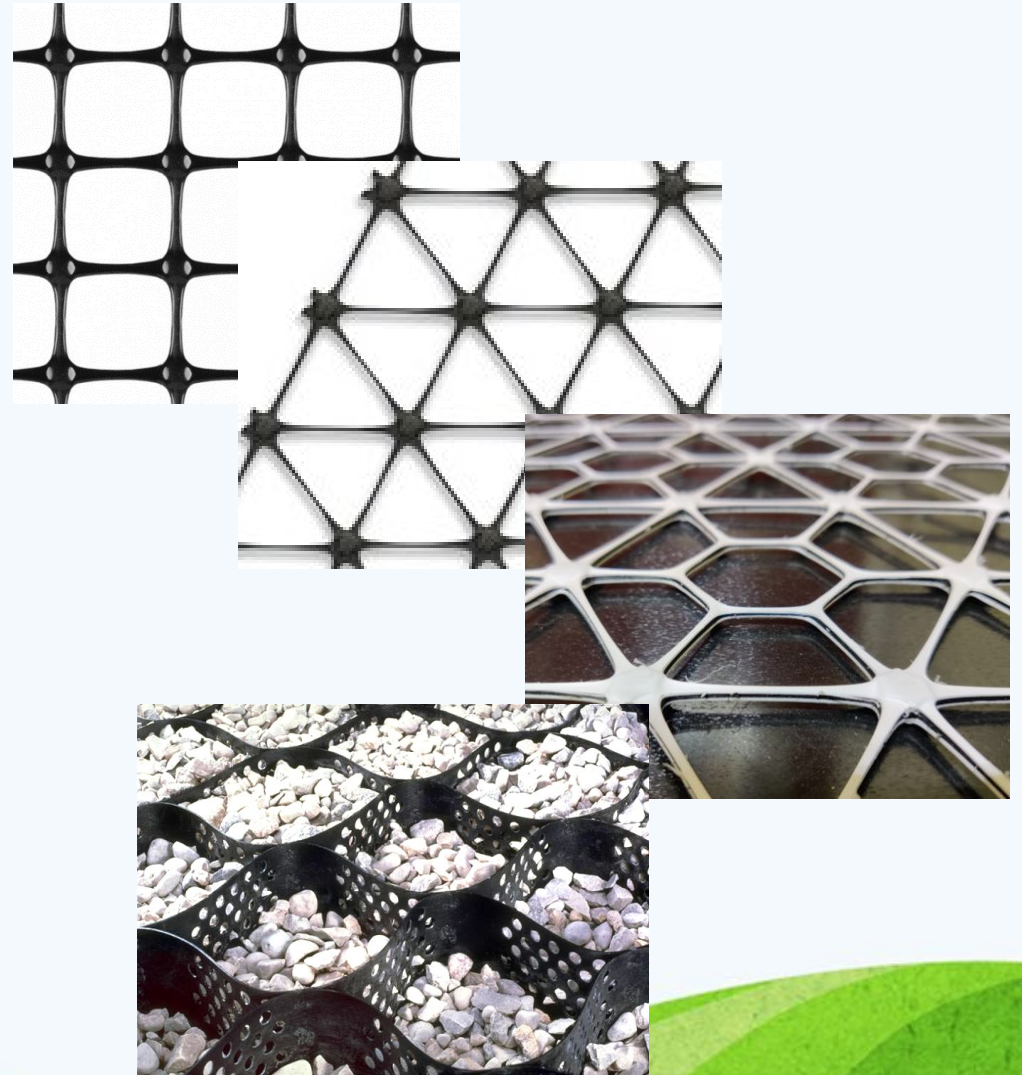
- These areas have never seen the level of traffic or the weight loads that this construction brings
- Proper design is inclusive of reinforcements, stone, geotextiles, and takes phasing into construction
- Grading practices will affect drainage and sediment pollution opportunities.
- Multiple BMP's Available to mitigate exposure
- Vegetated Mats





# HAUL ROADS (IMPLEMENTATION)

- Soil bearing capacity (measured by borings, CBR, DCP, etc.) help determine what's needed
- Geogrid has been effectively utilized on IN energy projects
  - Not all geogrids are created equal – some require more stone
  - May also need geotextile for separation and/or performance improvement
  - Other options are available for more severe conditions
- Benefits
  - More stable access/haul roads = less opportunity for trackout
  - Less stone/fewer loads = enhanced sustainability



# CONSTRUCTION PHASING (DESIGN)



- *Agricultural areas are typically designed in 40-80 acre plats in terms of drainage*
- *These developments are 1000's of acres*
- *The drainage will change dramatically on each site*
- *Moving flows can result in timing of peak events and result in major flooding downstream*
  - *Relative to the resultant curve number and amount*
  - *Has potential to turn into the chicken/egg scenario in terms of zoning, survey, and drainage studies*
  - *Are contours consistent in the mapping : Standard of 1'*



# CONSTRUCTION PHASING (IMPLEMENTATION)

- *How much vegetation will be stripped?*
- *Is there stormwater storage on the site?*
- *Will the permeable soils be removed or impacted?*
- *What does phasing look like*
- *Existing Drainage/tile system impacted/eliminate*
- *Sheet flow will Be increased dramatically, what is that impact?*
- *What BMP's can be used to control phasing to minimize the impact?*
- *What is being cleared and by whom?*
- *Is there a clearing request being made before permitting by current land-owner?*
- *Is there and ordinance pertaining to maximum phase size*





# Structural BMP's: Silt Fence

- Does it meet the State Requirements in terms of:
  - Fabric
  - Stake Spacing
  - Trench Depth
  - Stake Size
- Did the designer use the manufacturer design recommendations?
  - $\frac{1}{2}$ - $\frac{1}{3}$  acre sheet flow per 100' of fence
  - Wide open fields: Was wind damage or maintenance considered?



# Structural BMP's: Filter Sock



What did the designer specify? Was the area of sheet flow taken into consideration? Will we allow the constructor to deviate from the design to save money? IE: Smaller Diameters or another BMP such as Silt Fence? What is the danger?



# Structural BMP's Concrete Washout

- Is there enough capacity onsite?
- Are they clearly marked?
- Are they sealed?
- Do they meet the engineered design?
- What is the design capacity?

\*How many washout facilities does 75,031 trucks require?





# Structural BMP's Temporary/Permanent Seeding

- *What is the seed type?*
- *Does it meet the engineered design?*
- *Is the engineered design relative to our eco-system?*
- *Were recommended application rates followed?*
- *When will work resume in that area?*
- *Is more needed? Is it washing out?*
- *Are tackifiers or other methods needed?*
- *Was 70% Vegetation Established for NOT*



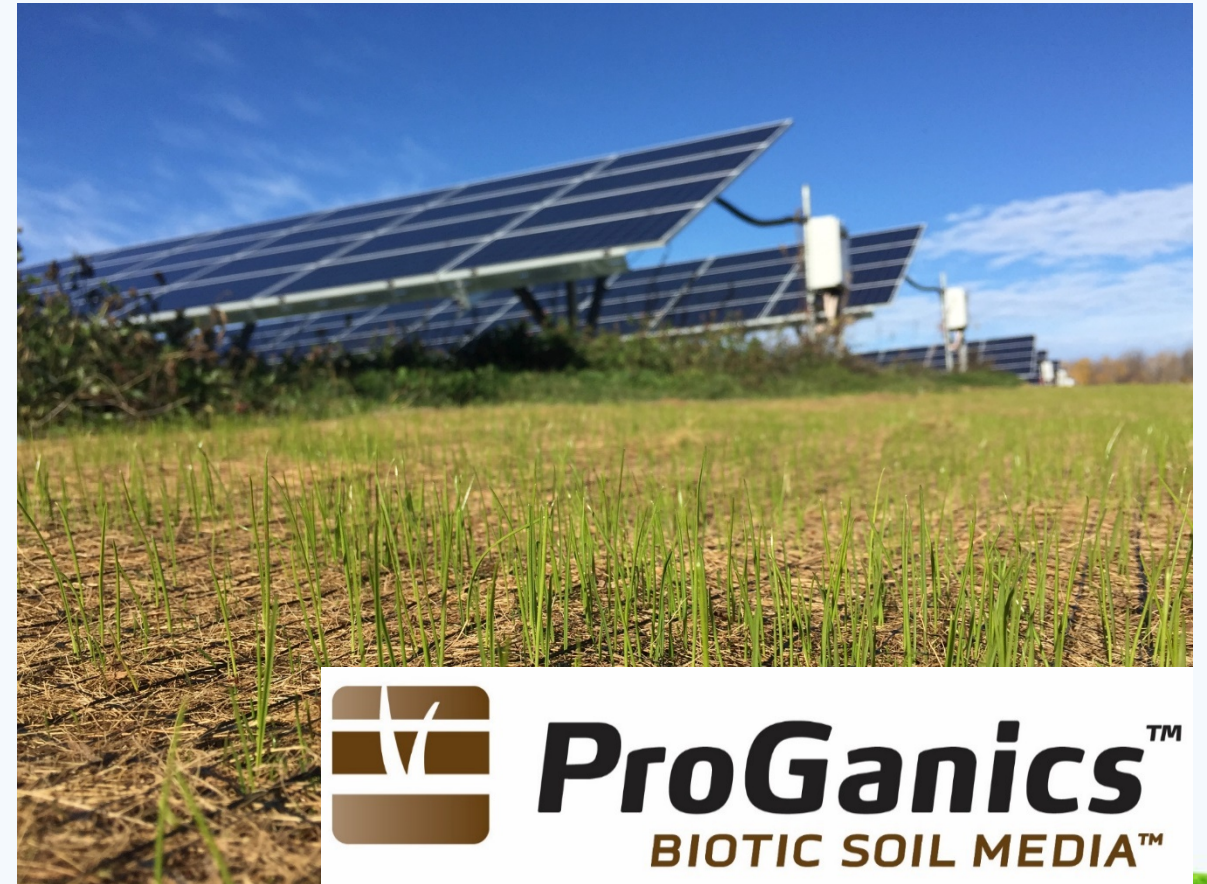
Bring out the reinforcements:  
when vegetation isn't enough



InstaTurf.  
**SHEARFORCE** 10  
Soft Arrow Back Solid Protection™



# Biotic Soil Amendments: when vegetation needs some assistance





# PRARIE PRESERVATION/RESTORATION



*Opportunity to restore large swaths of prairie: Natives can improve the overall curve number/infiltration on a site as well as provide pollinator habitat*



# PRARIE PRESERVATION/RESTORATION



Video Link: Mark  
O'Brien



<https://www.youtube.com/watch?v=Hyi1l4h3glU>



CARDNO

# PRARIE PRESERVATION/RESTORATION

- Natives can be tall depending on the plant. Low height/low maintenance mix (<3') is best for decreasing maintenance and making sure the plants don't interfere with energy collection.
  - <https://www.cardnonativeplantnursery.com/docs/default-source/catalog/solar-field-pollinator-mix.pdf>
- Phasing is also an issue with vegetation. Bury cables/foundations/etc., then vegetate before placing panels.
- In general, need to make sure soils will support vegetation. It might be relatively health topsoil at the start, but if stockpiled for extended periods, the soil chemistry will change – it will lose organics, beneficial bacteria, etc. that will support vegetation.



# SOLAR PANEL ORIENTATION



Orientation of panels to allow veg to establish more easily and minimize shallow concentrated flow (channelization) to slow down flow/spread out the peak. Want to place lines of panels parallel to contours, not perpendicular (think lines of grape vines up a slope).

Regardless of best practices with these first two points, keep scour protection at outlet points in mind. Areas that previously were protected by unreinforced vegetation may now need increased levels of protection.

- If can't orient panels parallel to contours and otherwise show reduced hydraulic impacts, need to provide a buffer or pre/post detention of at least the water quality flow volume, usually 1" to 1.5" in Indiana. This will help both water quality and flood mitigation of smaller storms

# PART 3: Where can Ms4's, regulators, and inspectors focus their efforts?



Design Review

Construction  
Phasing

Sediment Control  
For Sheet Flow  
Areas

Temporary  
Surface  
Stabilization

Soil Mapping



# PART 3: Where can Construction Site Inspection Focus Their Efforts?



Rule 5 Permit  
Posting

Construction  
Entrances

Perimeter  
Control  
Measures

Swales/Grading  
and Phasing

Stabilization



# Work starting on 13,000-acre solar farm in two Indiana counties

October 15, 2021 | Associated Press

KEYWORDS [ECONOMIC DEVELOPMENT](#) / [ENERGY & ENVIRONMENT](#) / [SOLAR POWER](#) / [UTILITIES](#)

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An Israeli company has started work to build a solar energy farm that's planned to cover some 13,000 acres across two northern Indiana counties when completed.

Executives of Doral Renewables took part in a groundbreaking ceremony Thursday with Indiana Gov. Eric Holcomb and local officials for the project that is estimated to cost \$1.5 billion to build over the next few years.

The project, dubbed Mammoth Solar, will see solar panels erected in Starke and Pulaski counties, generating electricity that Doral will sell under a long-term agreement to American Electric Power for the Columbus, Ohio-based utility company to increase its renewable energy capacity.

The solar farm's first phase is expected become operational by mid-2023 and will produce 400 megawatts of electricity, enough to power 75,000 households, according to the company. Construction is planned to start next year on other phases of the farm, which will ultimately generate 1.65 gigawatts of electricity as they begin operating in 2024.

Proposals for large solar farms have faced opposition in some places over loss of farmland.

But Starke County Commissioner Mark Gourley said he was excited about the project coming to the rural area about 50 miles southwest of South Bend.

"I've never in my life seen anything like this project here," Gourley said. "This energy that we harvest here in Starke County is going to enrich lives throughout the county."

Israeli Ambassador to the U.S. Gilad Erdan joined in the groundbreaking ceremony after Holcomb traveled to Israel in May to show support for the country after the 11-day war between Israel and Gaza's militant Hamas rulers.

"We stand together when our economies are attached," Erdan said. "We are now building the future here on Indiana's soil."

# MAMMOTH SOLAR – Midwest

THIS \$1 BILLION, PRIVATELY FUNDED PROJECT WILL GENERATE UP TO 1,000 MEGAWATTS (A GIGAWATT) OF CLEAN, RENEWABLE ELECTRIC POWER. IT'S ENOUGH TO SERVE 117,000 MIDWESTERN HOUSEHOLDS ANNUALLY.

The unique geographic characteristics of the area assures economies of scale that will deliver the lowest cost for energy. Flat land, situated on a key grid location, is the most suitable place in America for a large solar farm and will provide a big break for farmers and the community.



*"Our family is excited and honored to be part of a project that will provide cleaner energy for our future generations. Also we are happy for the opportunities that the project will bring to our local community."*

**Doug and Cheryl Podell**  
Landowners

# What is Mammoth? (<https://gegrenewables.com/mammoth-solar/>)



[HOME](#) [ABOUT US](#) [PROJECTS](#) [LANDOWNERS](#) [RENEWABLES](#) [NEWS ROOM](#) [BATTERY STORAGE](#) [CAREERS](#) [CONTACT US](#)



## HEALTH AND ENVIRONMENTAL BENEFITS

- Safe to surrounding agricultural and wildlife habitats – projects must conduct environmental and feasibility studies prior to construction, to ensure compliance with local, state and federal environmental regulations.
- Crystalline silicon solar panels are made with an aluminum frame, tempered glass, and the remainder is made of common plastics. The materials are commonly found and used in everyday building materials. They can be recovered and recycled at the end of their life. Solar cells are made from silicon<sup>1</sup>.
- The panels for this project are safe and are required to pass the EPA's Toxic Leaching Characteristic Procedure (TLCP) test which certifies that panels are nonhazardous. The materials used are found in common electronic equipment and are contained and encased, therefore avoiding risk to public health and water supply.
- Solar projects use little to no water for operation, providing benefits to other agricultural fields in the region<sup>2</sup>. The project will result in 15 billion fewer gallons of water being taken from the water table over 30 years. At present, annual soil loss from crop production is around 3.1 tons per acre, caused by water and wind erosion. Due to minimal water use, this solar project will avoid around 418,500 tons of topsoil erosion, over the contract period.



## Safety

### (Fire Hazard)



GEG does not have a fire plan in place for the required additional training and fire equipment needed in order to respond to an emergency. -**Star City Fire Department Members**

"On June 5, 2019 a California Solar Farm that burned 1,127 acres, caught on fire because of a BIRD." - [SOLAR FARM FIRE BURNS 1,127 ACRES](#)

"And the faults in question are no ordinary malfunctions but real, blazing fires, the nightmare of anyone who has solar panels." - [What the Walmart solar panel fires tell us about solar safety... and about Tesla](#)

## Environmental Impact



"While it's far from the only industry struggling to dispose of old devices, there's an extra challenge with solar panels: recycling isn't economically viable right now." - [More solar panels mean more waste and there's no easy solution](#)

"Field crop agriculture is being looked to as one of the solutions to global climate change." - [Corn fields help clean up and protect the environment](#)

[Natural devastation in Spotsylvania County, Virginia](#)

What is Mammoth?  
<https://www.pulaskicountyagainstsolar.org/about>



# *It's your State*

*What we can do together to ensure water  
quality and preservation of our resources*

*Add a Slide Title - 6*