



National Academies of Sciences, Engineering, and Medicine

Transmission Workshop:

Setting the Stage: Regulatory
Environment and the “Why”

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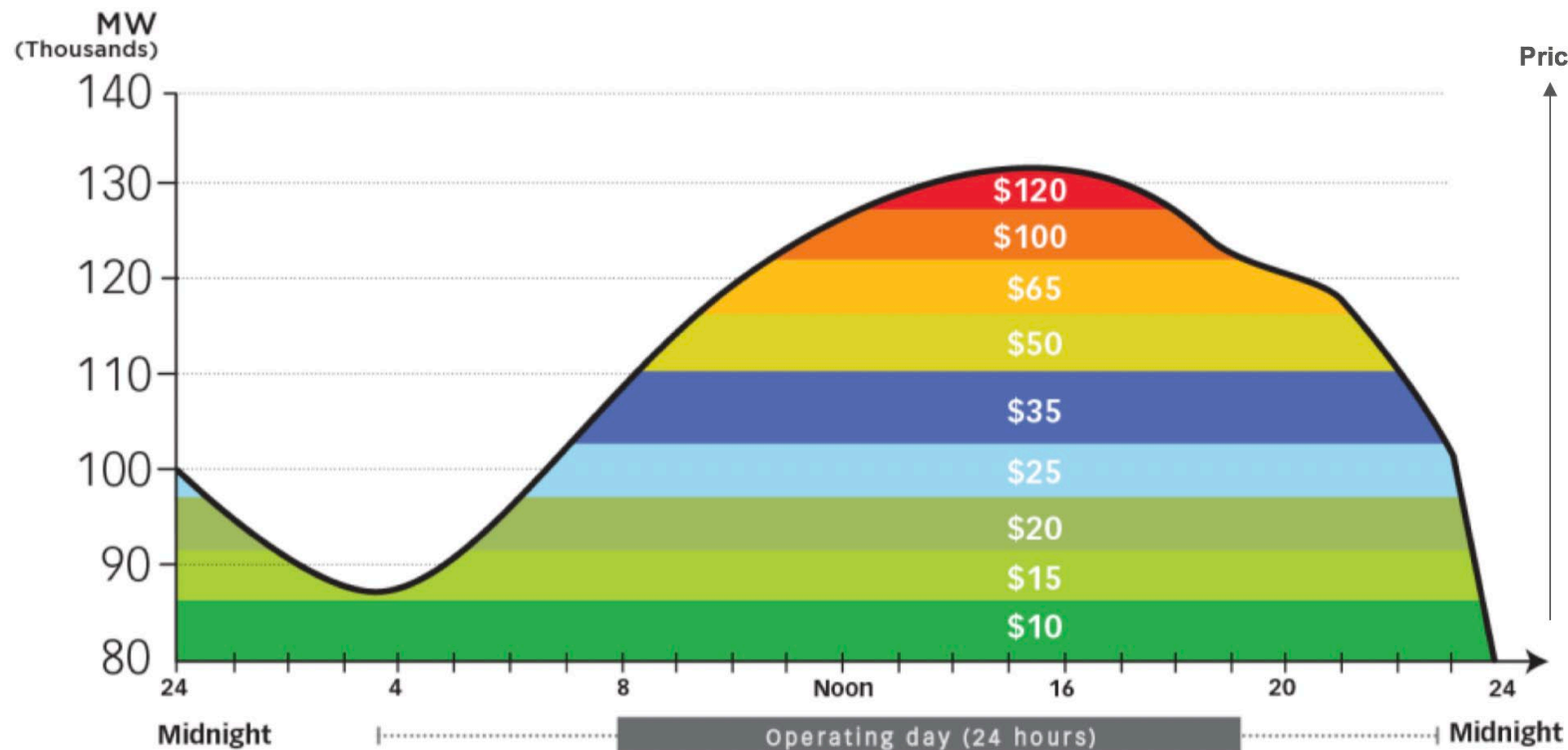
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How Wholesale energy markets work

“Locational Marginal Pricing” (LMP)

- “Locational marginal cost” = what it costs a resource to produce 1MWh in a given area or node.
- Stacks and dispatches resources from lowest cost to highest to meet demand

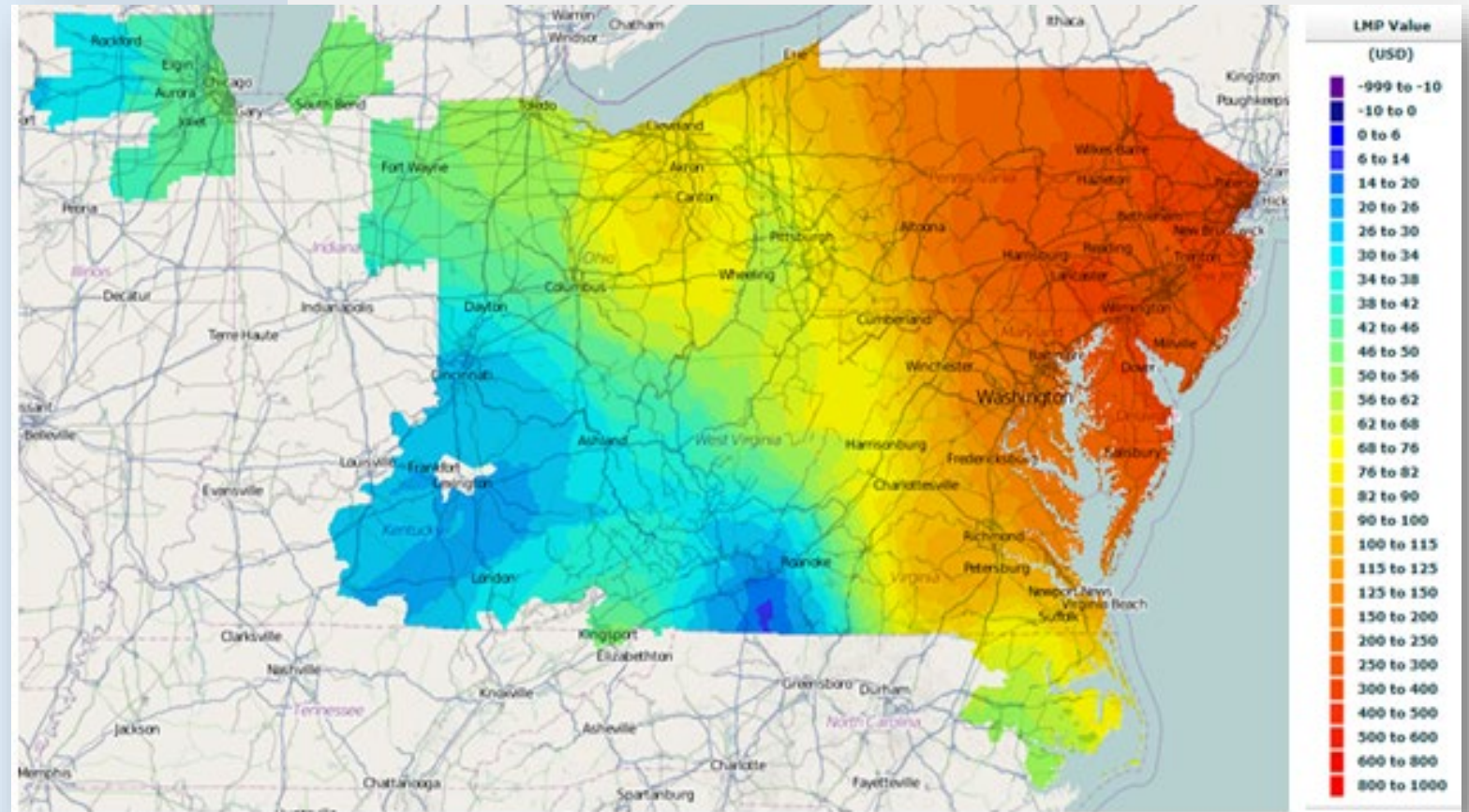


Source:
PJM

Source: PJM

Why do energy prices vary by location?

- Transmission constraints
- Extreme demand
- Disruptions

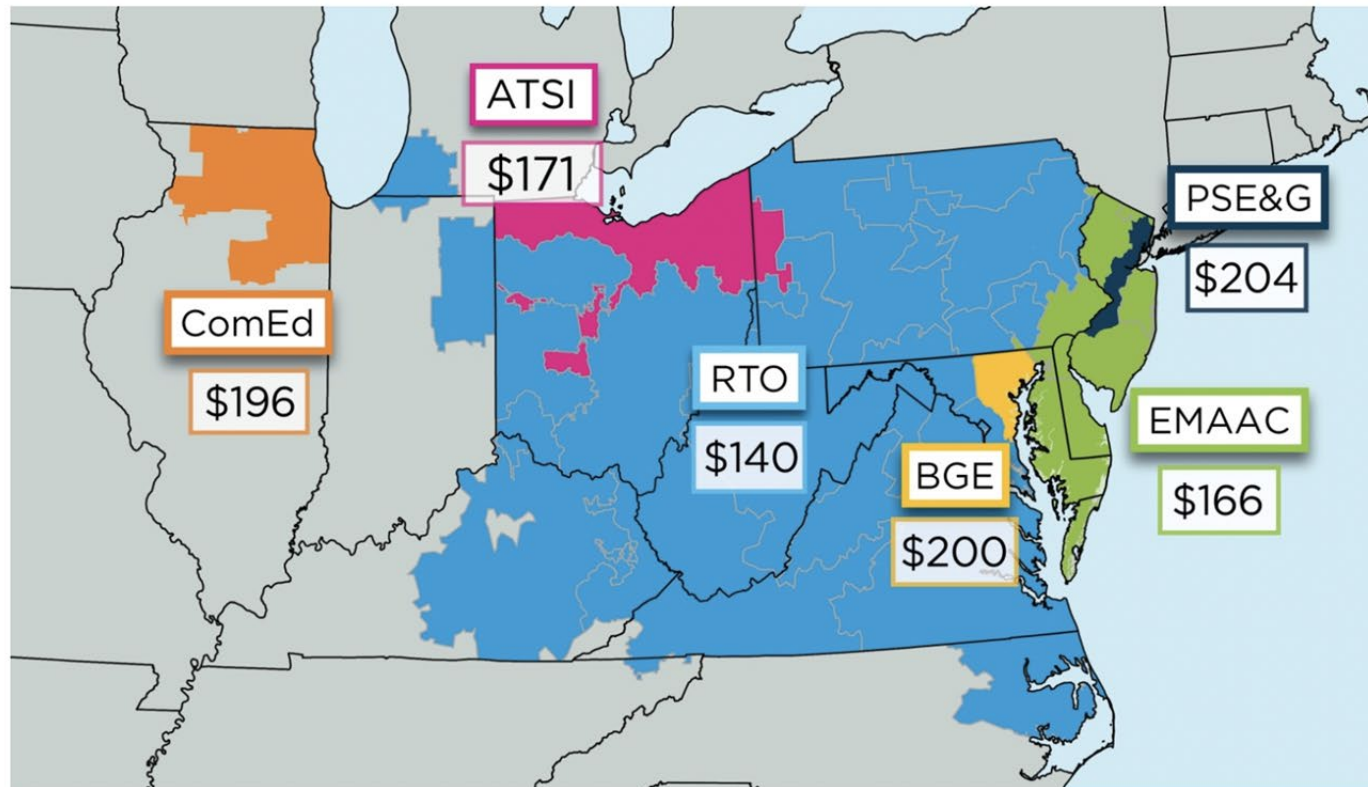


Source: Avalon Energy Services

Source:
PJM

Base Residual Auction Results for 2018

2021/22 Base Residual Auction Clearing Prices (\$/MW-Day)

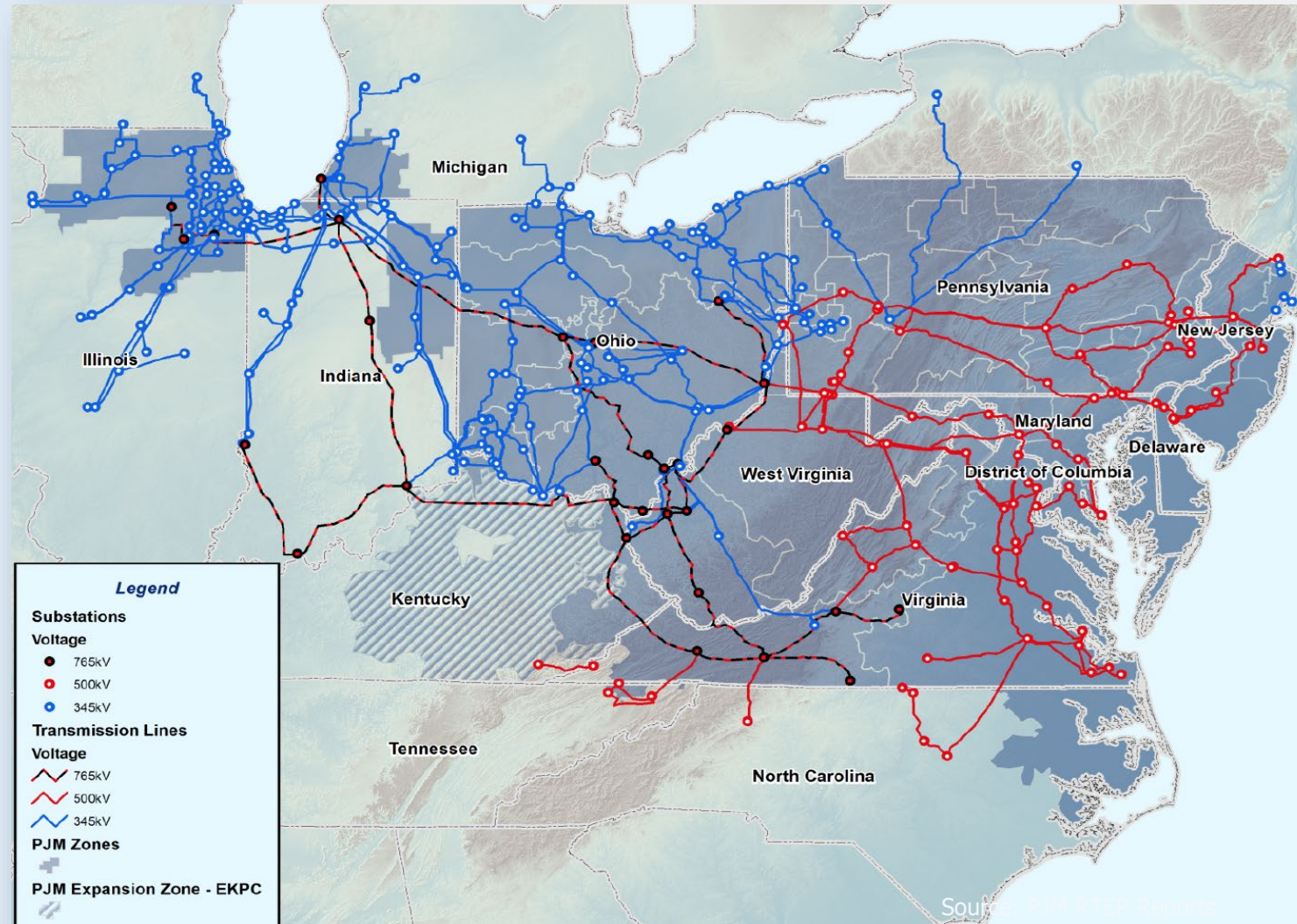


Source: PJM RPM results

Source:
PJM

Regional Transmission Organizations (RTOs) act as the “Air traffic controller” for the grid

- Responsible for –
'Keeping the lights on'
- Balances supply and demand (“generation and load”) within the constraints of the transmission system



Source:
PJM

Who we are | energyRe is a large-scale developer of renewable energy

energyRe is a **U.S. based developer of large-scale** renewable energy. We are mission-driven to make **reliable, clean power accessible** by delivering large-scale **generation & transmission** solutions directly to **American cities and communities**.

World Class Team – *we have leading industry experience*
(former management team of EDPR North America + other executives from Tier 1 companies along with support and capabilities of world class partners: Related, Elia Group & Novo)



\$30B+ renewable energy investment track record

National Footprint – *between energyRe and the Related Companies, we have offices across the country*



Key offices *(selected)*

1. Houston, TX (HQ)

2. New York, NY (HQ)





3. Boston, MA
4. Indianapolis, IN

5. Charleston, SC

6. Chicago, IL

Our Portfolio

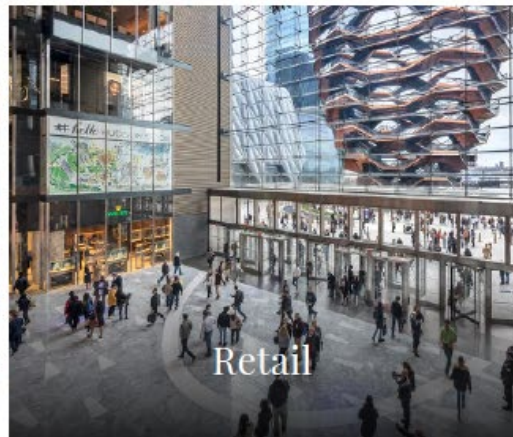
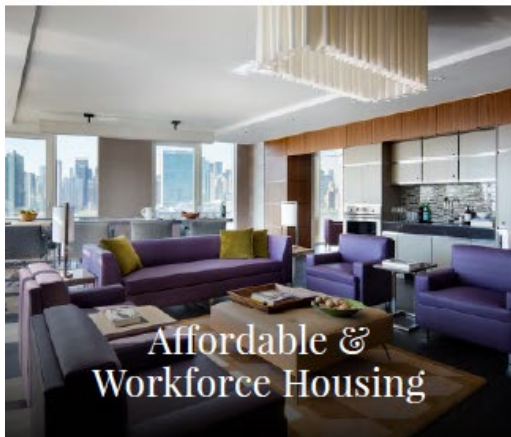
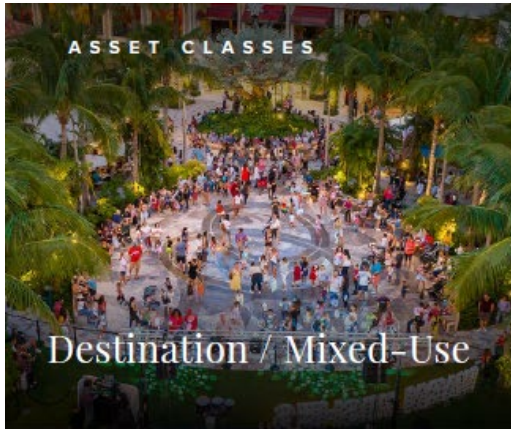
energyRe’s integrated strategy allows for **synergies** that unlock significant potential across a **large and diversified portfolio** of HVDC advanced transmission (500 miles), **~16.4GW** (gross) of utility-scale renewable generation development across **82 projects in 13 states**.

Business Line		Key Projects
Transmission		<ul style="list-style-type: none">SOO Green (350mi HVDC)
Offshore Wind		<ul style="list-style-type: none">Leading Light Wind (2.4GW)
Onshore Generation		<ul style="list-style-type: none">Solar generation (5.4GW)Solar + Storage (4.4GW)Wind generation (1.9GW)
Distributed Generation		<ul style="list-style-type: none">Active Development (181MW)Pipeline (1,210MW)

Related Companies | A strategic partner to support onshore construction and land acquisition capabilities



Related Companies asset classes



\$70B+ Real Estate Portfolio

Owned, and/or managed, and under construction

71,200 Residential Units

54,000+ affordable/workforce units
9,850+ luxury rental apartments
7,350+ luxury condominiums

~35M ft² of Commercial Space

retail, office and hotel

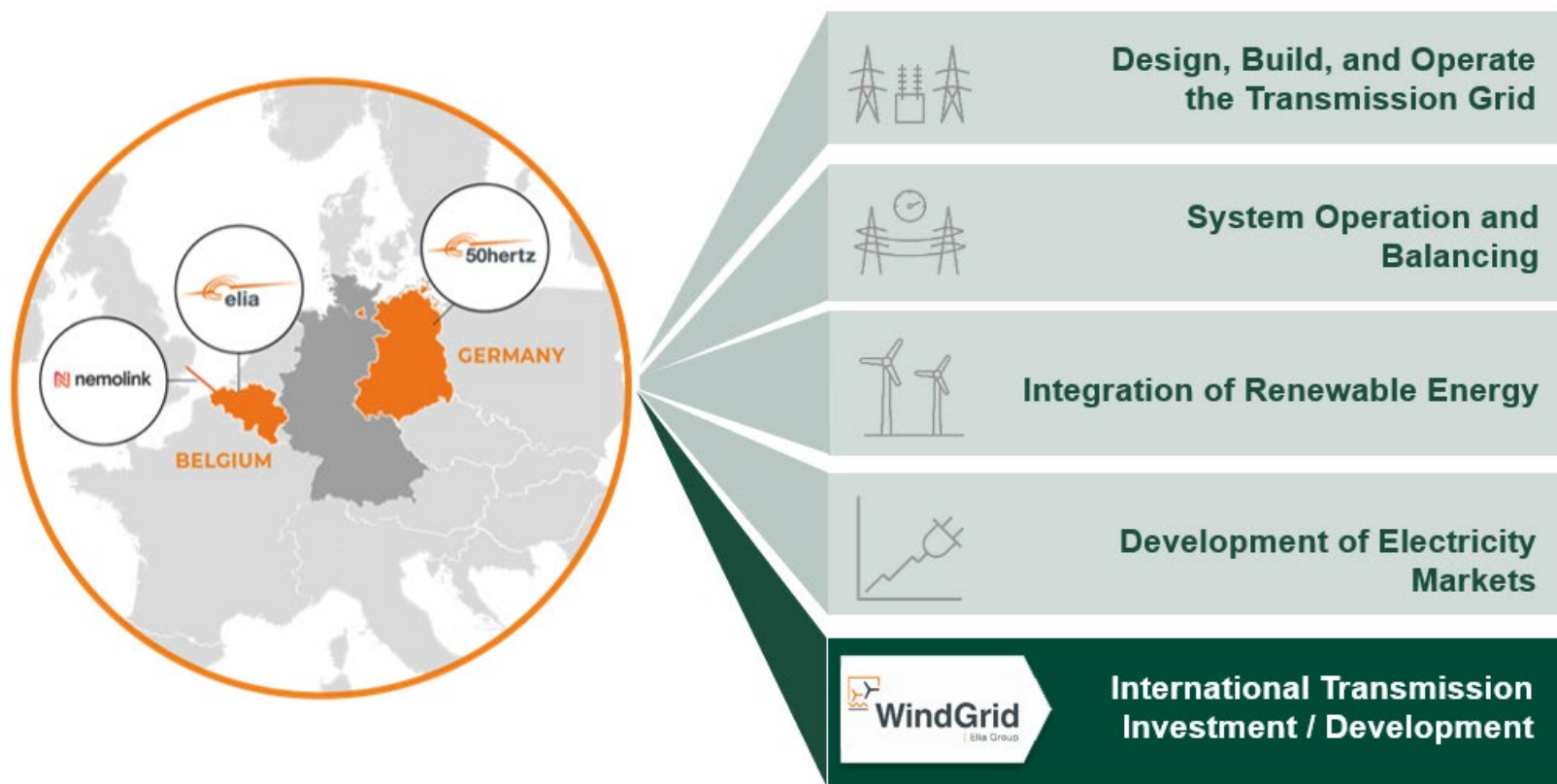
Developer of Hudson Yards

The largest private real estate development in US history
28 acres w/ 20M ft² of development

Focus on Gateway Cities

New York, Boston, Chicago, Washington DC, Los Angeles, San Francisco, West Palm Beach, Miami, Austin, Abu Dhabi, London

Elia Group | A strategic partner to deliver major transmission infrastructure projects



+20 years

Experience in Europe to develop, build and operate **large offshore transmission** projects

\$30B CAPEX

Planned by 2028 across global portfolio

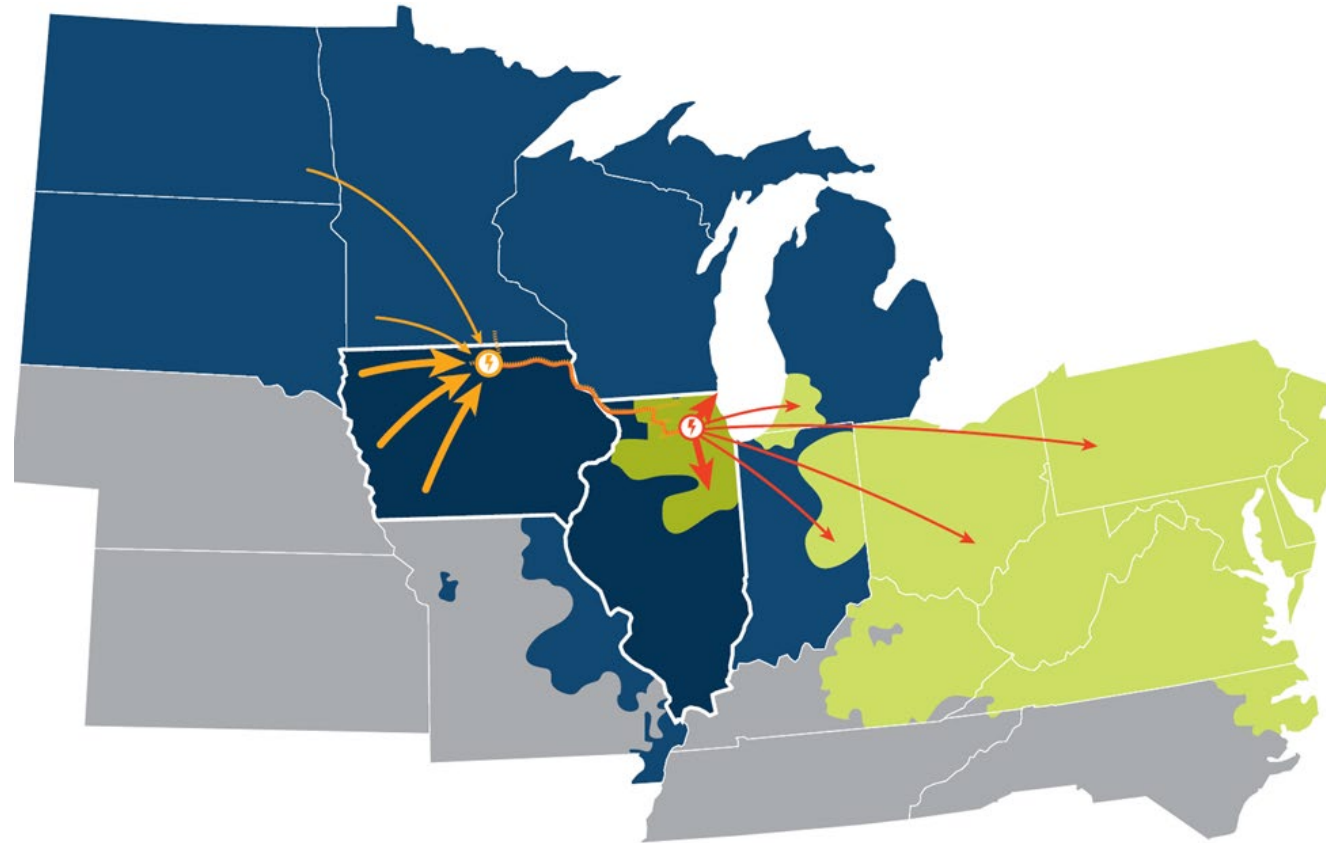
Strong Financing

Being a regulated company, Elia is a reliable investor and contributes to **project bankability**

Project Delivery

Ability to deliver projects with precision, **high reliability and cost efficiency** over asset lifetime

Connecting Regional Wholesale Electricity Markets



SOO GREEN will source low-cost, renewable generation from MISO, which serves 15 midwestern states and 42 Million customers

SOO GREEN will interconnect on a robust point in the ComEd zone of PJM, which serves 13 eastern states and 65 Million customers

SOO Green - Backed by Experience and Financial Strength



The world's largest investor in renewable energy infrastructure projects; more than \$19B in equity invested.



Backed by Related Company (largest private real estate developer in the US)



One of the world's leading players in high voltage transmission infrastructure technology, including a leading market position in High Voltage Direct Current (HVDC) systems.



Part of a 100 year old family business in the US. Jingoli Power is a leading construction company in the power industry.



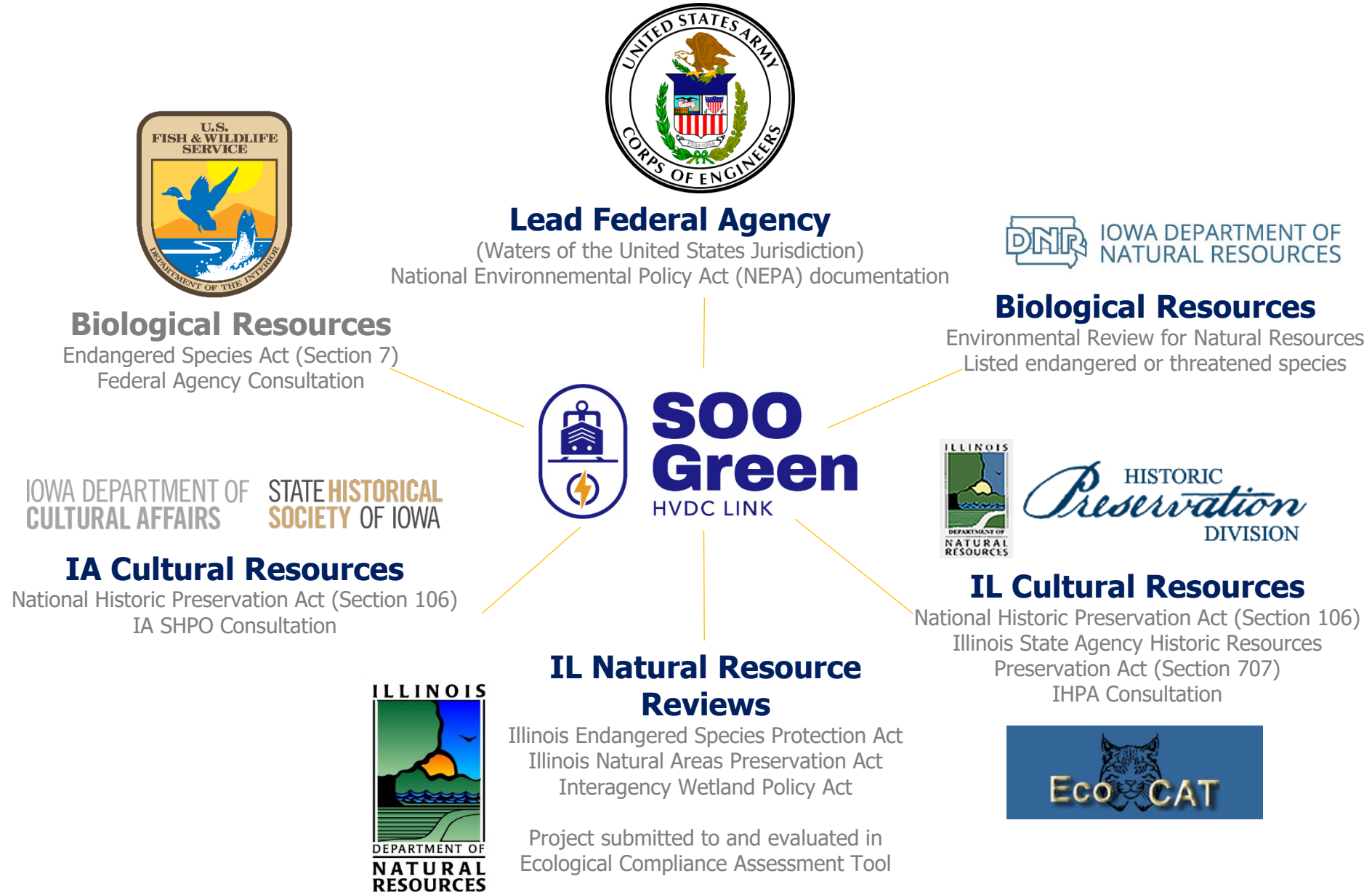
PPL operates more than 1300 miles of high voltage transmission lines within the PJM service territory. They are experts in transmission system operation.

SOO Green Project Specifications

MISO Terminal Location	North Central Iowa
PJM Terminal Location	North Central Illinois
HVDC Converter Technology	Siemens 525kV VSC
Cable Technology	525 kV XLPE
Transmitted Power / Net of losses	2100 MW / 2035 MW
Construction Start	2025
Construction End	2029



Development Phase Environmental Reviews



SOO Green - Project Status

- **Right of Way nearly 100% Secured (NO EMINENT DOMAIN REQUIRED)**
- **Permitting on Track (NW57 permit – US Army Corp of Engineers lead agency)**
- **Project:**
 - **HVDC supply from Siemens (global technology leader); designed to be bi-directional**
 - **Cable supply from Prysmian (manufactured in South Carolina)**
 - **Commercial Operation Date: Q2 2029**
- **Interconnection:**
 - **MISO (Iowa): In Progress**
 - **PJM (Illinois): In Progress, looking at changing structure of SOO Green to a 'State Agreement Approach' model**
- **Generation: In multiple discussions with Generation Developers in Iowa**
- **Power Consumers: Working with State of Illinois on a SAA designation which would allow the project to be coordinated with PJM to be placed directly into PJM's Regional Transmission Expansion Plan (RTEP)**