

Public Power CEOs Luncheon

Kevin Wailes, *Lincoln Electric System*



12TH ANNUAL
Nebraska
Wind & Solar
CONFERENCE & EXHIBITION

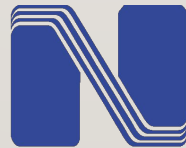
Submit Questions at [Slido.com](https://www.slido.com) - Code #K126

Public Power CEO's Luncheon

NEBRASKA WIND & SOLAR CONFERENCE

OCTOBER 29, 2019

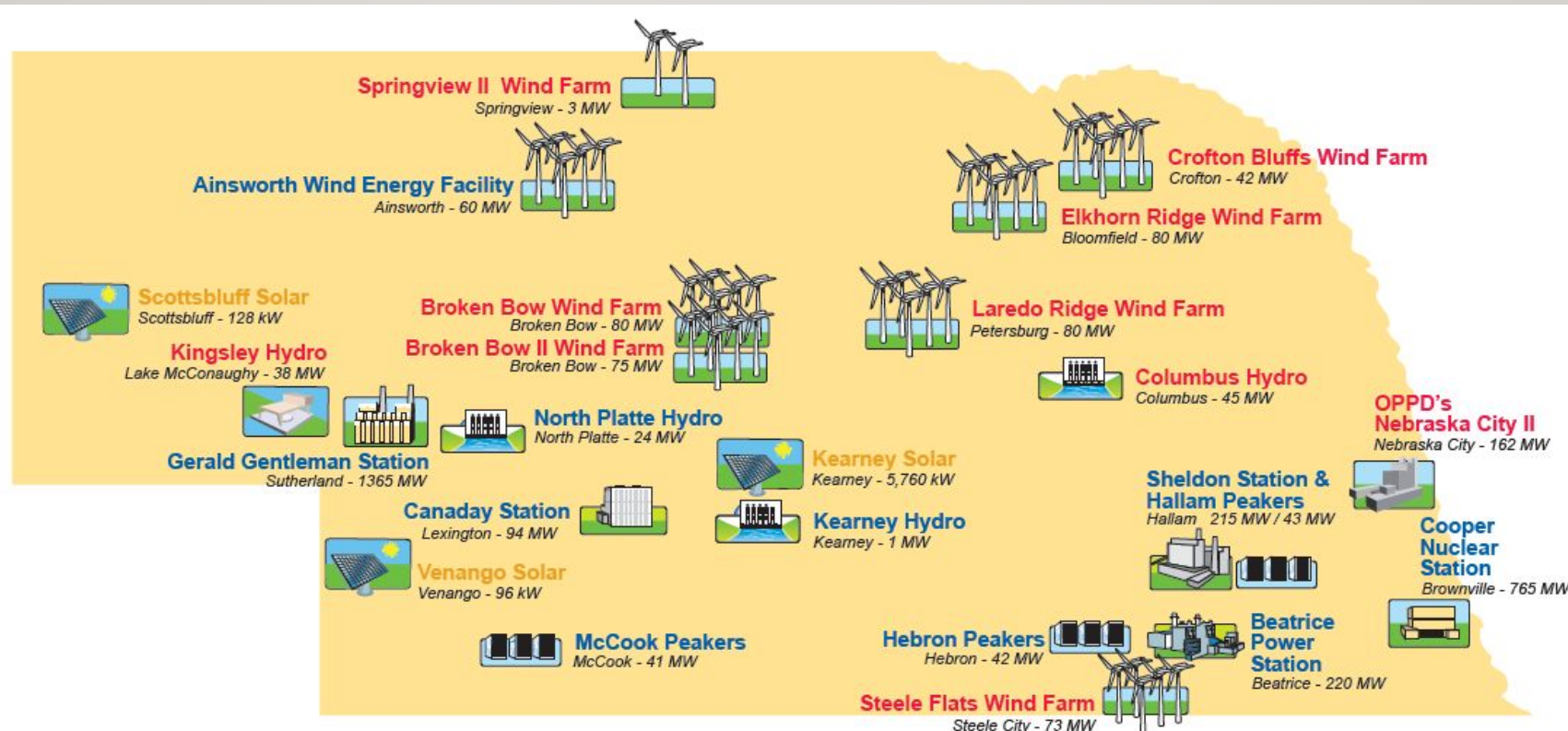
DAVID RICH, SUSTAINABLE ENERGY MANAGER



Nebraska Public Power District

Always there when you need us

NPPD'S GENERATION PROFILE



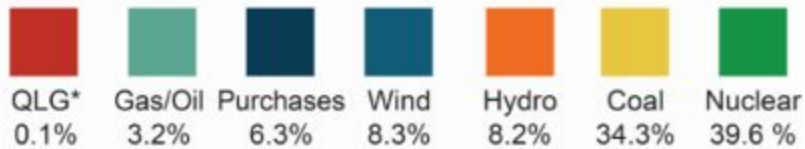
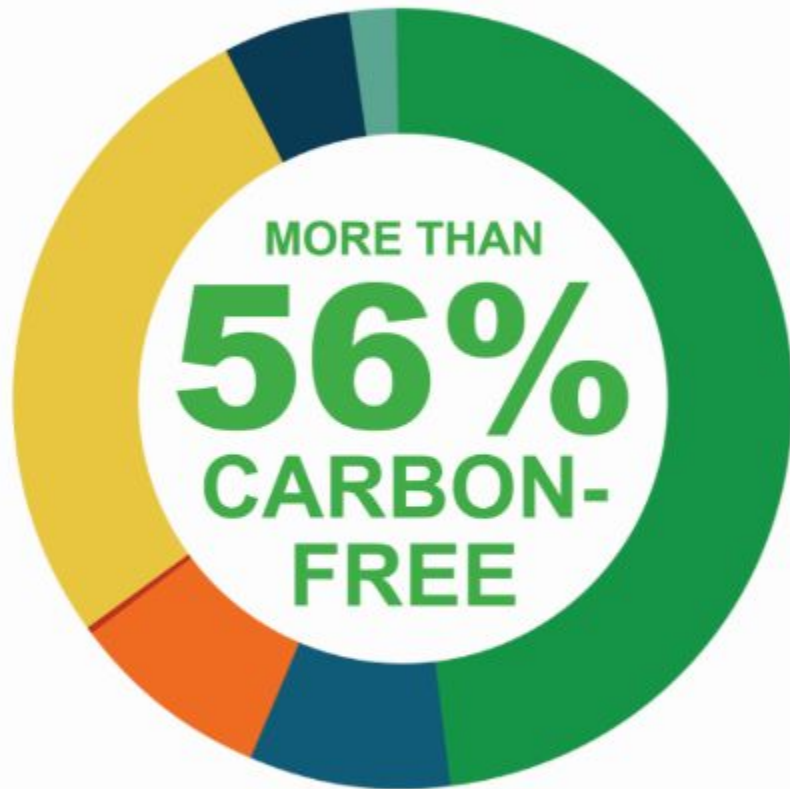
LEGEND

- NPPD Owned
- Power Purchase Agreement (All or Part)
- Retail Community Solar Locations

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8/19

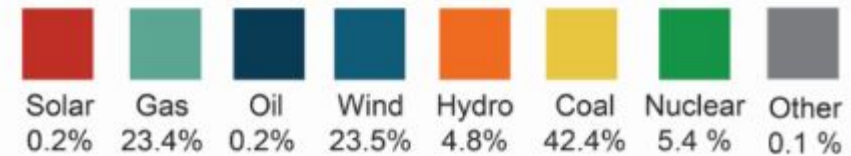
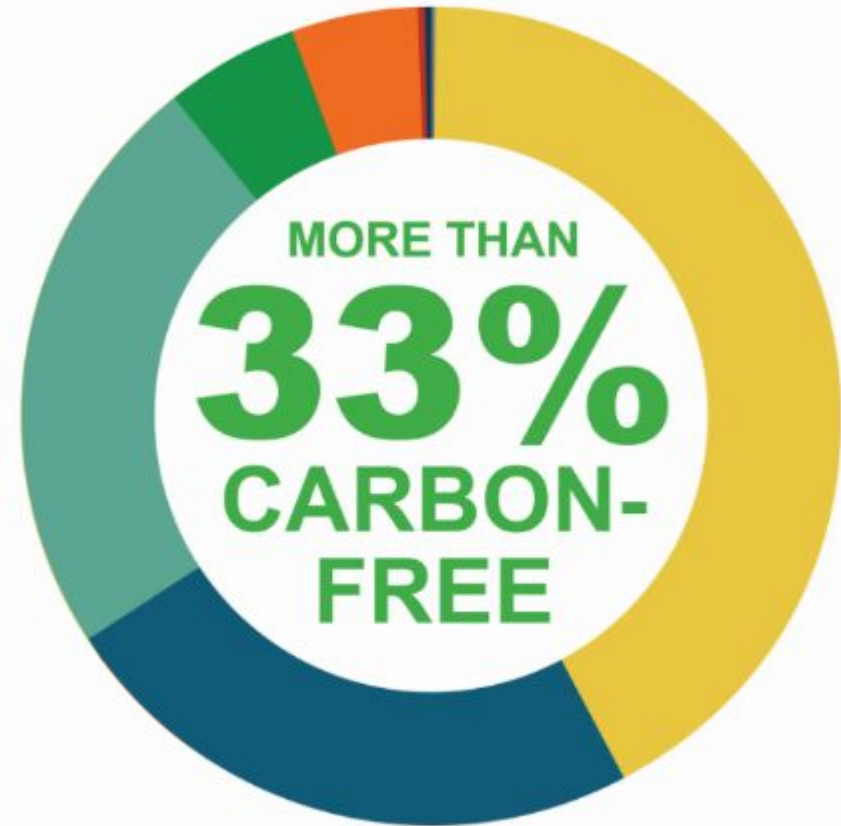
2018 NPPD Energy Generation Resources

Nebraska Customers



*Qualifying Local Generation (QLG) includes renewable energy facilities installed by our wholesale customers and in NPPD retail communities.

2018 Southwest Power Pool Energy Generation Resources



NPPD COMMUNITY SOLAR UPDATE

Projects Up and Running &
in Pipeline for Development

Operational

Kearney

Scottsbluff

Venango

Scottsbluff II – Under construction

Norfolk – PPA being finalized

Expressed strong interest
& in pipeline

Ainsworth

Chadron

Loup City

McCook

Ogallala

O'Neill

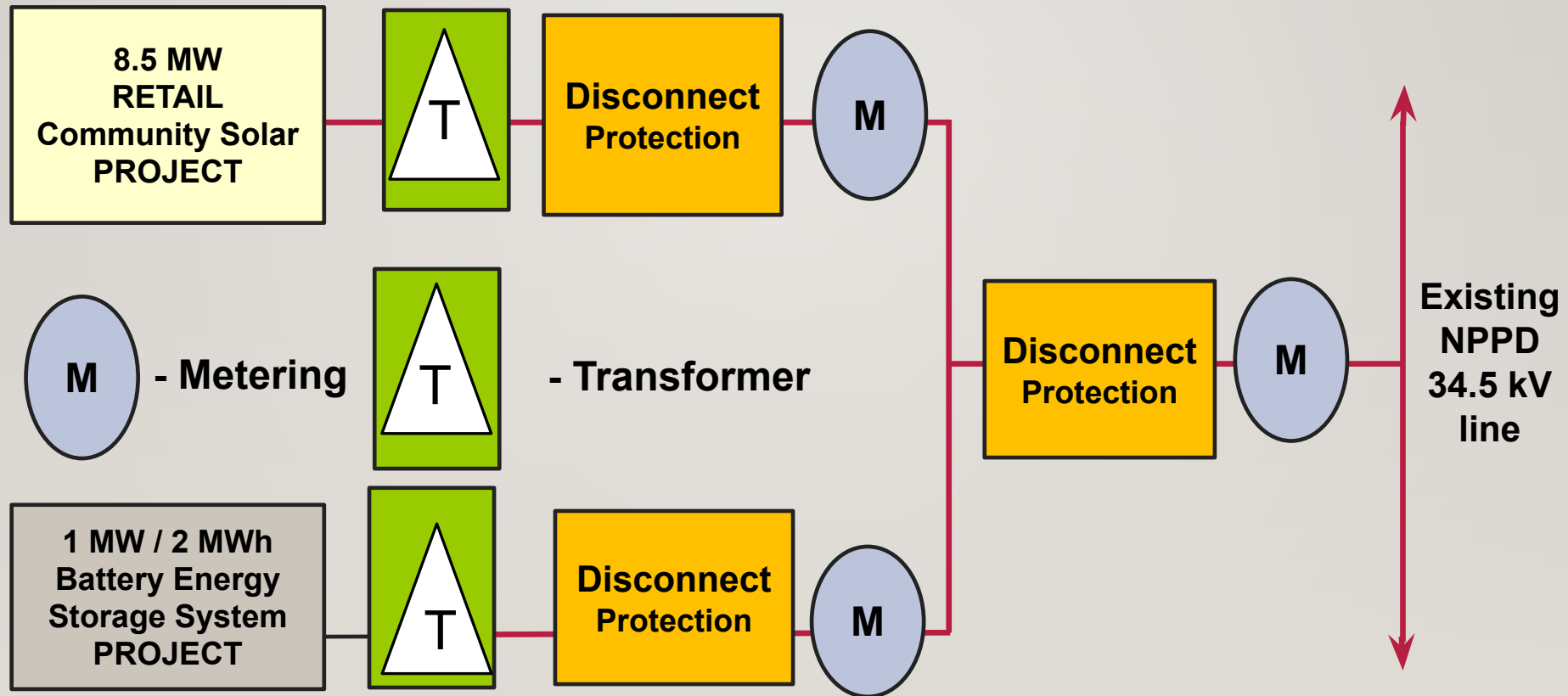
Pawnee City

York

NEBRASKA ENVIRONMENTAL TRUST GRANT APPLICATION (CITY OF NORFOLK) *BATTERY STORAGE SYSTEM*

- Requested grant of \$490,000 for 2-year project of 1 MW-2 MWh battery storage project
- Co-located with Community Solar project to utilize 30% Solar Investment Tax Credit (ITC)
- Located at Norfolk - City to provide land and “in-kind” support
- 1st year dedicated to retail for distribution system benefits
- 2nd year dedicated to production for SPP Integrated Market benefits
- Grant application approved in April 2019
- Planned 2020 in-service

NORFOLK COMMUNITY SOLAR & STORAGE PROJECT



Transformation of Sheldon Station from *Coal* to *Carbon-Free Hydrogen*

- Nebraska's First Nuclear Plant – 1950's
- Converted to Burn Coal / Natural Gas – 1960's
- Conversion to Burn Hydrogen – 2020's
- First Hydrogen Burning Power Plant at this Scale

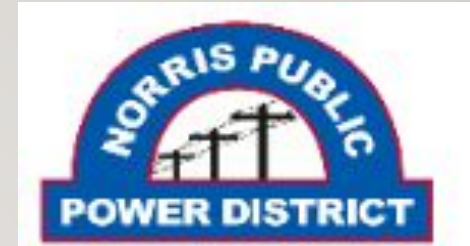


STRONG PARTNERSHIPS DO MATTER



Nebraska Public Power District

Always there when you need us

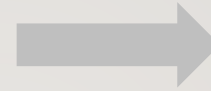


MONOLITH

- Monolith was Attracted to NPPD / Norris Electricity Rates (Economic Development Rate)
- Public Power Model – Stability for the Future
- Willingness of Monolith, Norris, and NPPD to Work Together – Common Values and Work Ethic

THE MARKET FOR CARBON BLACK

Current Combustion Process



Carbon Black Product



\$11.5 B/yr
Tires

\$2.4 B/yr
Industrial Rubber

\$1.6 B/yr
Plastics

\$0.4 B/yr
Inks

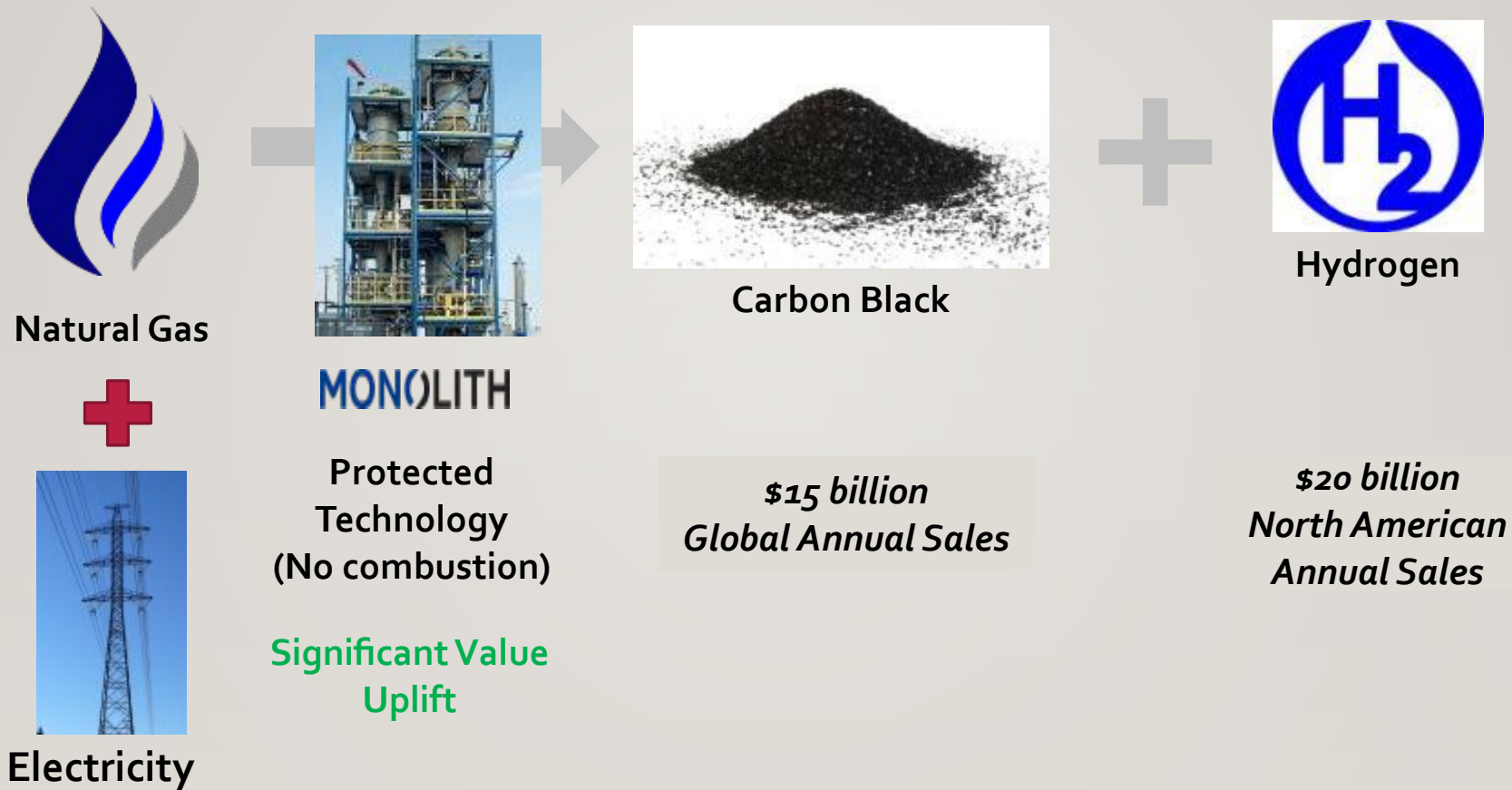
\$0.5 B/yr
Specialty

\$15 Billion in Global Annual Sales

Carbon black is virtually pure elemental carbon. Its physical appearance is a black, finely divided pellet or powder. It is used to reinforce, conduct and color.

It is one of the top 50 industrial chemicals manufactured worldwide based on annual tonnage.

MONOLITH'S BUSINESS IS UPGRADING NATURAL GAS



Monolith has differentiated, proven and protected technology with the capability to upgrade natural gas into two valuable commodity products.

Monolith Update

- **Olive Creek 1 (OC1)**
 - Reactor will make enough carbon black during its life to make 100,000,000 tires over 50 years
- **Olive Creek 2 (OC2)**
 - Plant expected to come online 2023
 - Hydrogen will be ready for use

MONOLITH UPDATE

STATUS OF OLIVE CREEK 1 PLANT

- ~ 85% of procured equipment, structural steel, piping, and equipment have arrived at site
- ~ 50% of construction is complete
- ~ 300 Fagan craft on site
- Initial production anticipated in the 1st quarter of 2020
- Electricity demand will increase in late 1st quarter 2020
- First carbon black sale mid-2020



MONOLITH UPDATE – OC1 AERIAL SHOT HALLAM IN THE BACKGROUND



MONOLITH UPDATE – OC1 AERIAL SHOT SHELDON STATION IN THE BACKGROUND



Electric Vehicle Incentives*

Incentive Type	Amount
Electric Vehicles	\$4,000
Charging Stations	\$500
Pre-Wiring	\$100

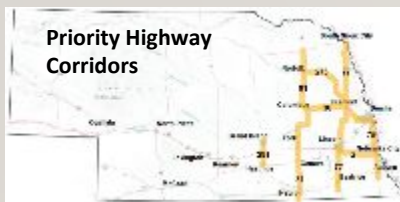
*** Incentives made available thru a Nebraska Community Energy Alliance grant to the Nebraska Environmental Trust**

Nebraska Dept. Of Environment and Energy 2019 Electric Vehicle Charging Grant Program

Application Due November 15, 2019

*NPPD can assist with the **complex** application process - Contact your local utility for details*

Charging Station	NDEE Max. Reimbursement	Min. Customer Match	NPPD Matching Funds
Level 3 - DC Fast Charging Station <ul style="list-style-type: none"> • Charger cost - \$35-\$70K • Electric Utility Cost - ~\$10k-\$40k • Electrician Cost - ~\$750-\$8,000 • 208V or 480V AC 3-phase between 50-350kW • ~30-40 minutes from empty to 80% charged 	80%	20%	NPPD will match customer's Nebraska Dept of Environment & Energy (NDEE) grant application commitment.
Level 2 Charging Station <ul style="list-style-type: none"> • Charger cost - \$7.5-\$9K • Electrician Cost - ~\$500-\$5,000 • 208V/240V up to 19.2kW • 4-8 hours from empty to full 	50%	50%	
NOTE: Customer will have an impact to their electric bill. Please see your local utility for a rate impact study.		Eligible Charging Sites: Highway corridor sites, public community/destination sites and workplace sites	



Insert Customer Logo Here

Level 2 Chargers



DC Fast Chargers



**Nebraska Public Power District
Published Wholesale Rate Adjustments**

12/10/18

2010 - 2019

Year	Base Rate	Rate with PCA	CPI
2010	5.9 %	5.9 %	1.6 %
2011	9.7 %	9.7 %	3.2 %
2012	6.5 %	6.5 %	2.1 %
2013	3.75 %	3.75 %	1.5 %
2014	(0.2)%	(0.2)%	1.6 %
2015	0.5 %	0.5 %	0.1 %
2016	0.6 %	0.6 %	1.3 %
2017	0.6 %	0.6 %	2.1 %
2018	0.0 %	0.0 %	2.4 % *
2019	0.0 %	(3.6)%	2.3 % *
Compounded Growth '10 - '19 »	30.3 %	25.6 %	19.7 %
Average Annual Compounded Growth Rate '10 - '19 »	2.7 %	2.3 %	1.8 %

* Consumer Price Index (CPI) is estimated.

28TH ANNUAL NEBRASKA OPEN

- **\$1,662,321** has been raised for scholarships for community college students in our service territory
- **\$83,250 in scholarships split between these colleges:**
 - Central Community College (Columbus, Grand Island & Hastings)
 - Southeast Community College (Beatrice, Milford & Lincoln)
 - Northeast Community College (Norfolk)
 - Mid-Plains Community College (McCook & North Platte)
 - Western Community College (Alliance, Scottsbluff & Sidney)
- **52** businesses sponsored the event with a record **\$185,000** raised this year

Renewable Energy Sponsors donated \$30,800

Ranger Power

N Solar

AEP Renewables

Geronimo Energy

Invenergy LLC

SunVest

NextEra Energy Resources



QUESTIONS



Power with Purpose

Continuing Our Journey

October 29, 2019



Agenda

- Setting the Stage
 - Looking back on our journey
- What guides our decisions
- Taking the Next Step
 - Why now?
- What Else

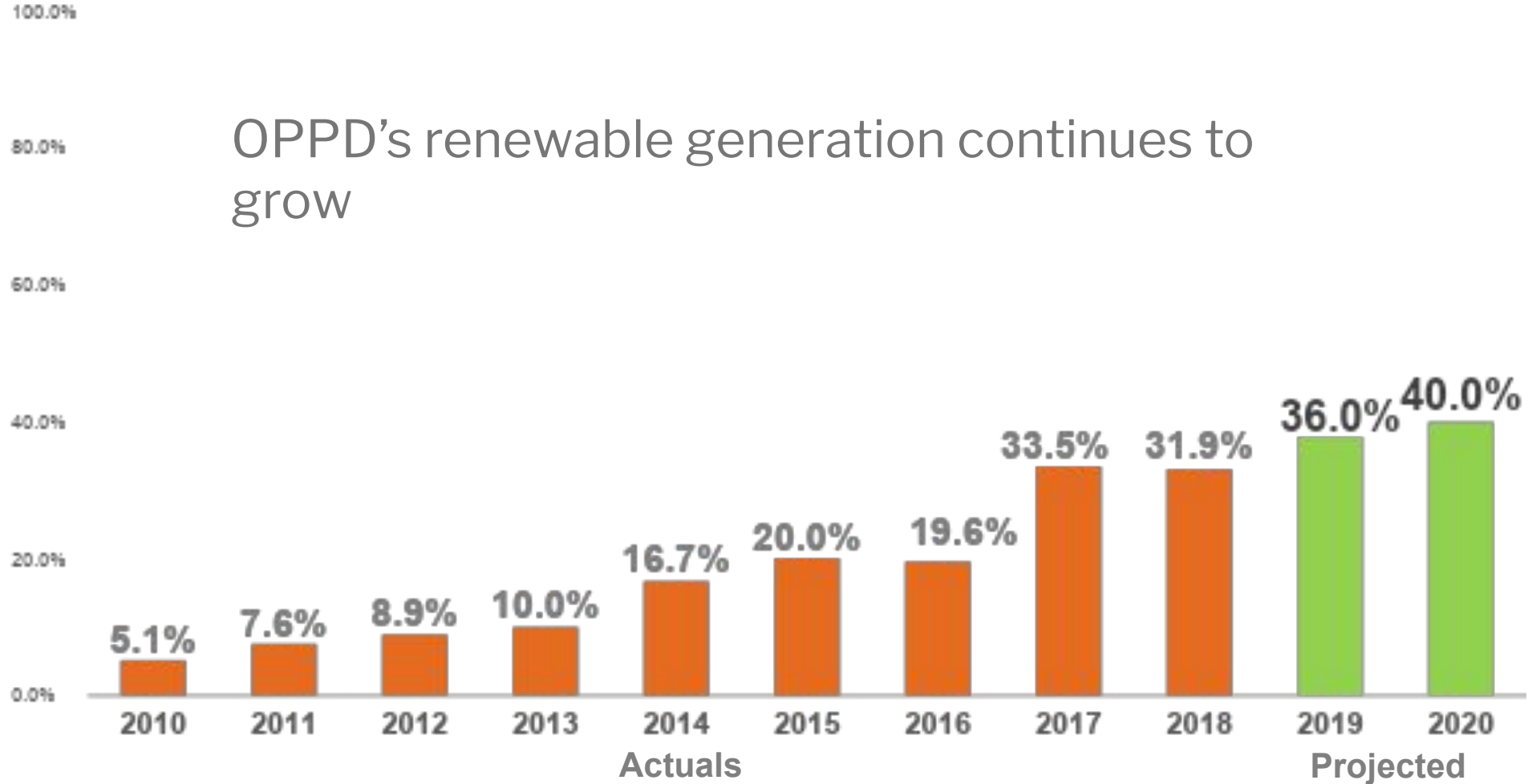


Setting the Stage


Where We've Been & How Far We've Come



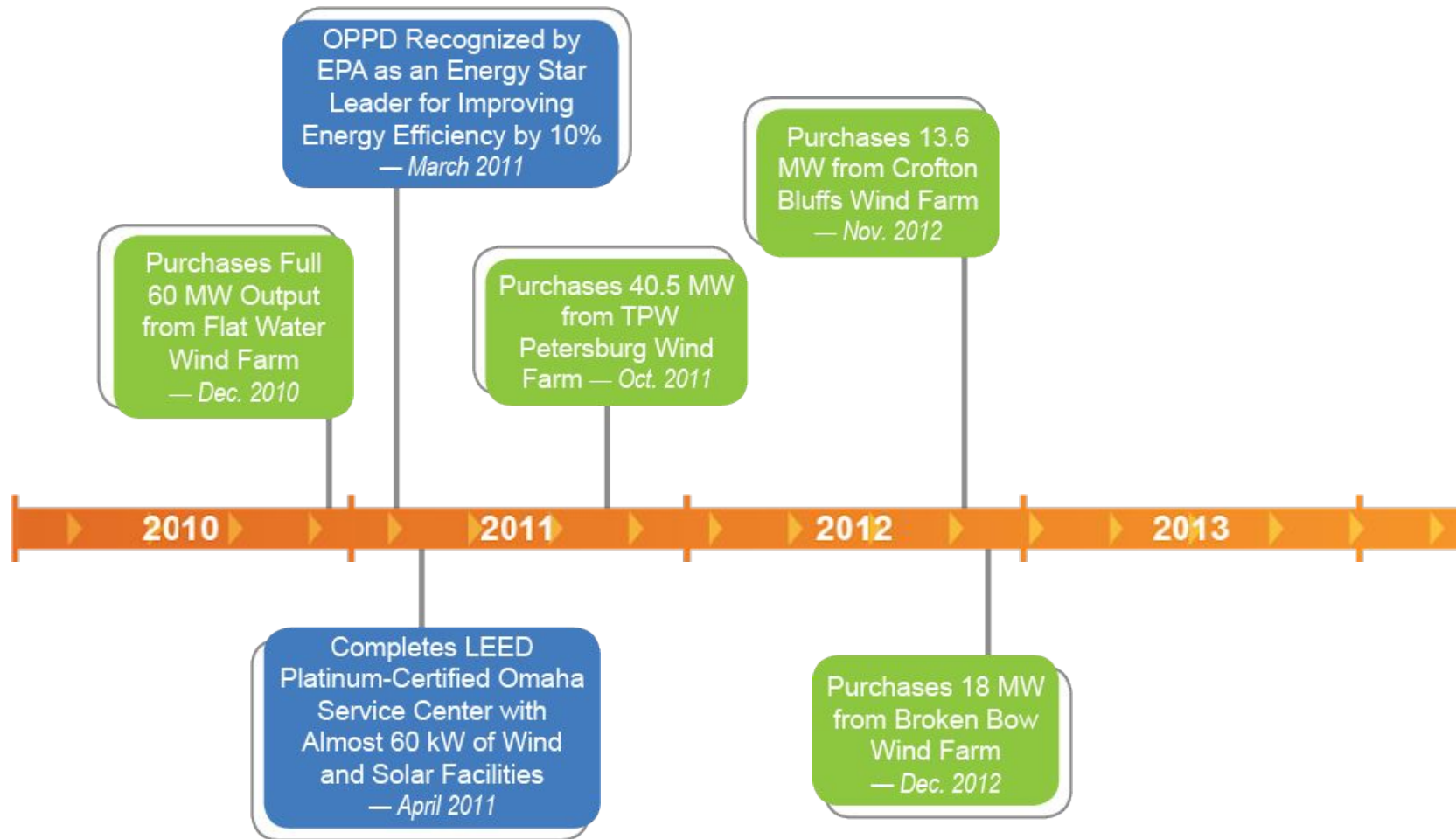
OPPD Renewable Generation



OPPD Journey Timeline: 2010–2019



Nearly 1,000 MW
of wind between
2010-2019





Renewables



Leadership



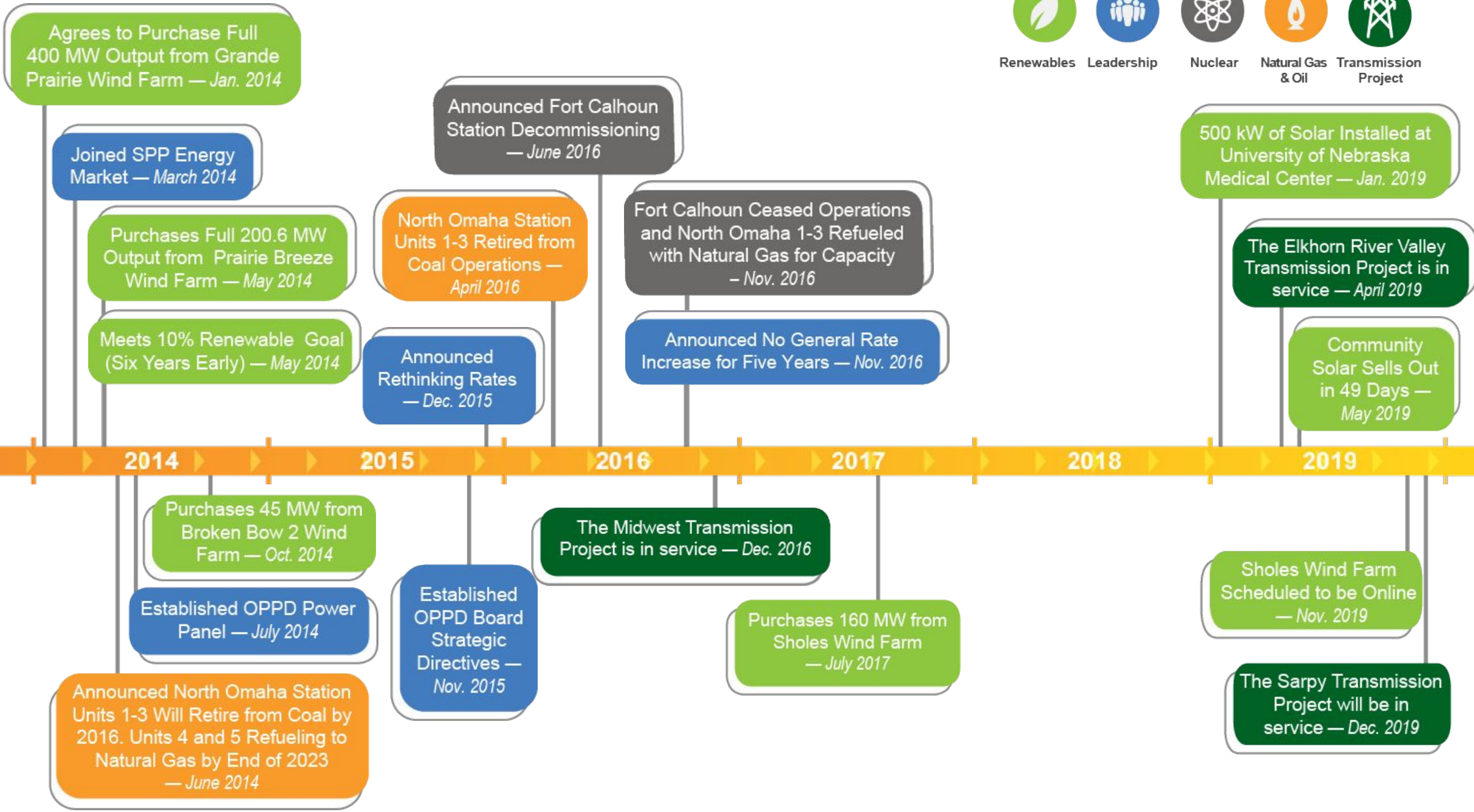
Nuclear



Natural Gas & Oil



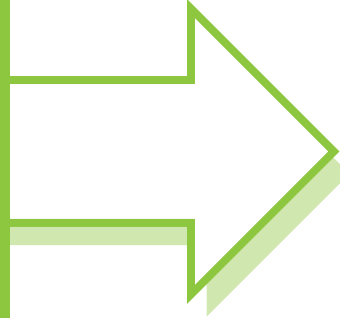
Transmission Project



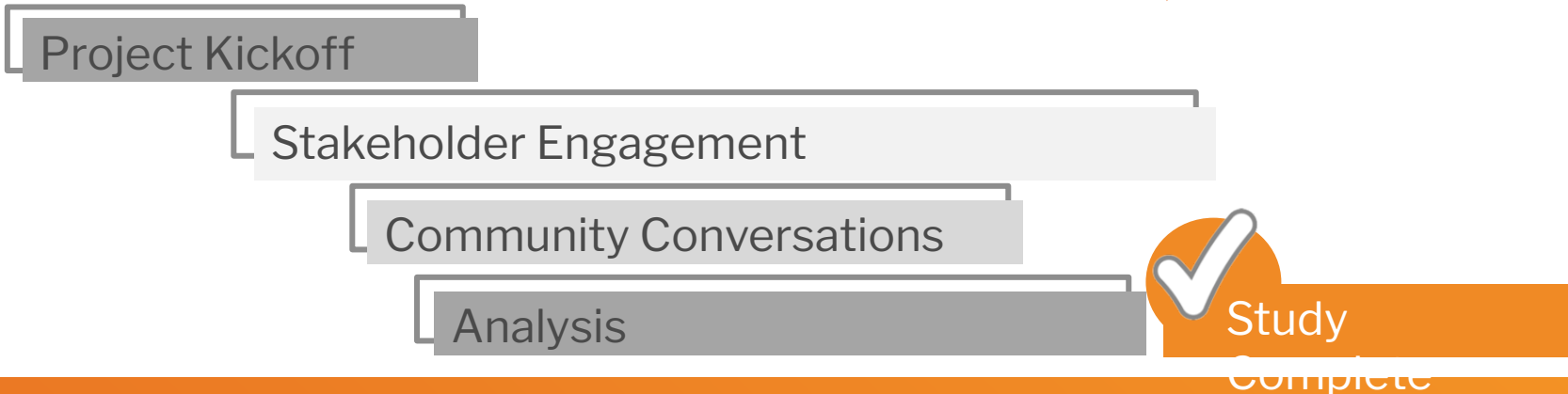
Our Next Step

Issue a Request for Proposal (RFP) for:

- One of the largest utility scale solar additions in the region with natural gas backup.
- Modernized, low-emitting natural gas assets; replacement for North Omaha (NO) Units 1-3 retirements.
- Voltage support device(s).



- Enables OPPD to fulfill plan to retire NO Units 1-3 and refuel NO 4 & 5 from coal to natural gas.
- By implementing these changes at NO, along with adding utility scale solar, natural gas backup and modernized natural gas technologies CO₂ emissions are expected to be reduced by 80-90% over current NO emissions.
- In total, over our journey from 2010 through 2024, we estimate a 30% reduction in CO₂ emissions.



What guides our decisions



Mission Statement

- Provide affordable, reliable and environmentally sensitive energy services to our customers.

Strategic Directives

1. Strategic Foundation
2. Rates
3. Access to Credit Markets
4. Reliability
5. Customer Satisfaction
6. Safety
7. Environmental Stewardship
8. Employee Relations
9. Resource Planning
10. Ethics
11. Economic Development
12. Information Management

Legal & Regulatory Obligations

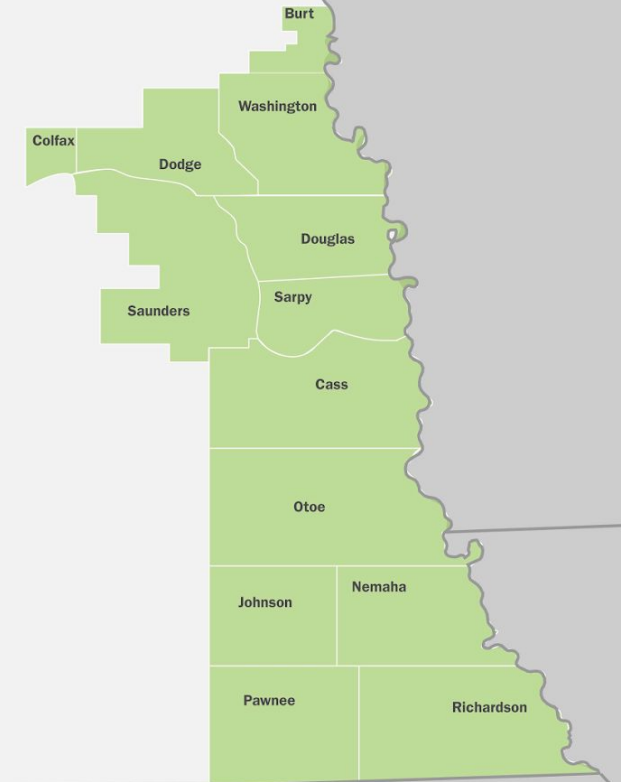
- State of Nebraska
- Southwest Power Pool (SPP)
- United States Federal Government

OPPD's State Obligations to Our Customers

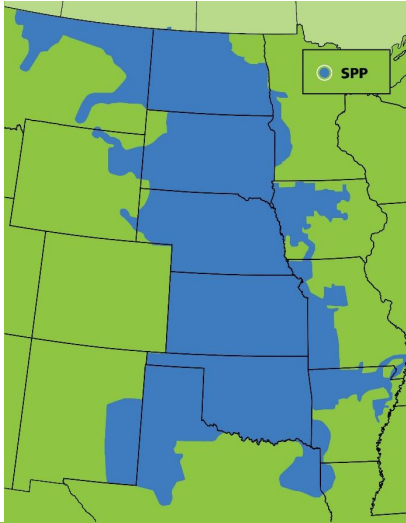
As a public power entity, OPPD has a legal obligation to serve all customers in our service area.

LEGEND:

● Service Area



OPPD's Obligation for Power Supply



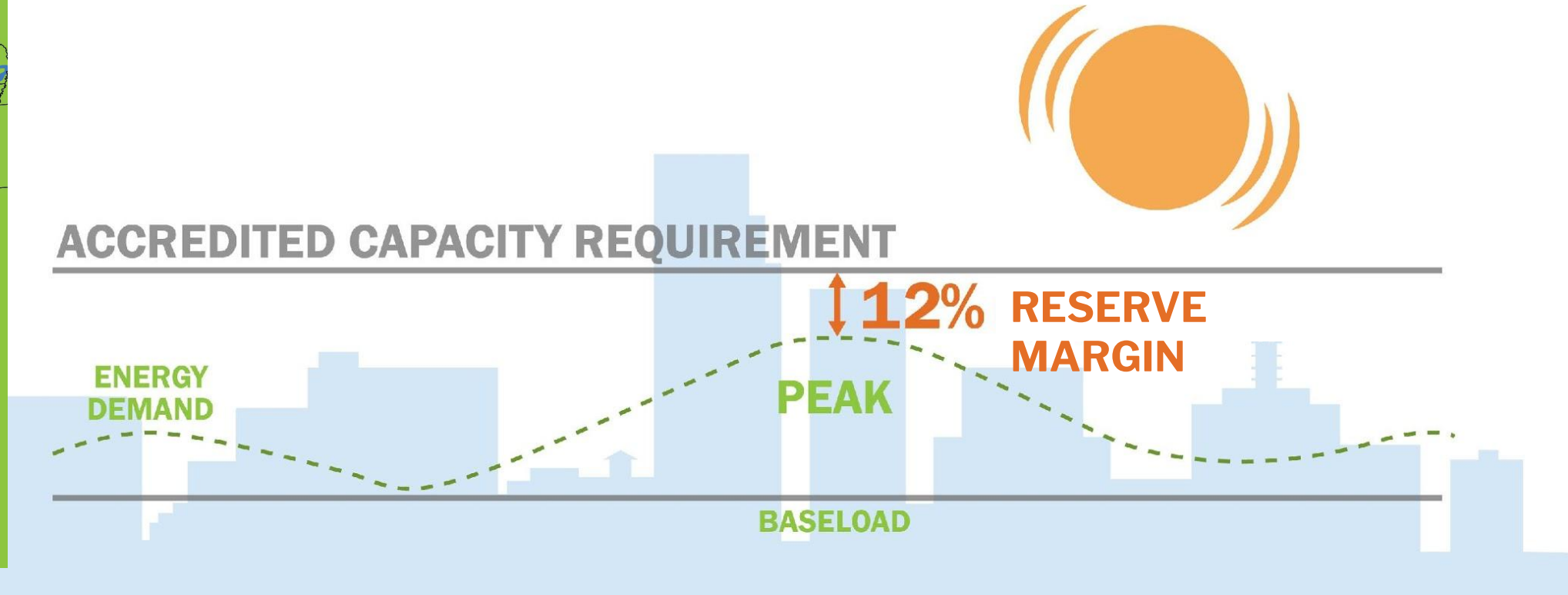
OPPD must guarantee a supply of power (generated or purchased) over 12% of the highest level of peak demand to meet generation and capacity requirements.

OPPD is part of the Southwest Power Pool (SPP), which ensures the reliable supply of power, adequate transmission infrastructure, and competitive wholesale

energy prices in

the central United States.

ACCREDITED CAPACITY REQUIREMENT



Taking the Next Step

Why Now?



We have been working to solve for:

- Changing generation landscape
- Supporting the needs of our growing communities
- Maintaining reliability and resiliency

Our framework for how we solve:

1. OPPD's Mission
 - *Affordable, Reliable & Environmentally Sensitive*
2. Strategic Directives
3. Legal and Regulatory obligations

Maintaining Optimal Resiliency Attributes

Changing Bulk Electric System Landscape

MidAmerican retires George Neal Energy Center coal Units 1 & 2

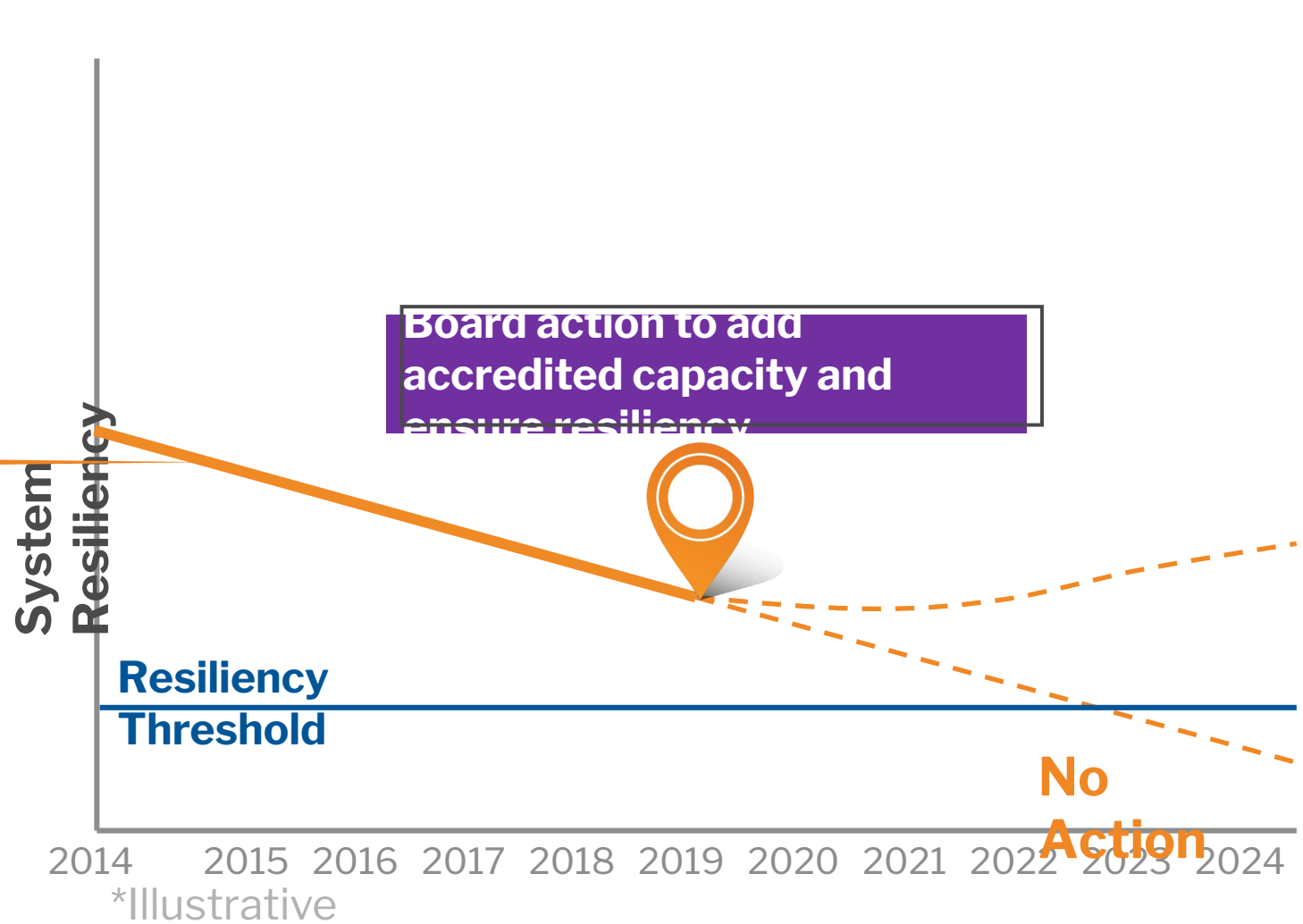
MidAmerican retires Walter Scott coal Units 1 & 2

North Omaha Units 1-3 converted to natural gas

Fort Calhoun ceased operations

Planned fuel switch of North Omaha Units 4-5 & retirement of Units 1-3

Expected service area load growth



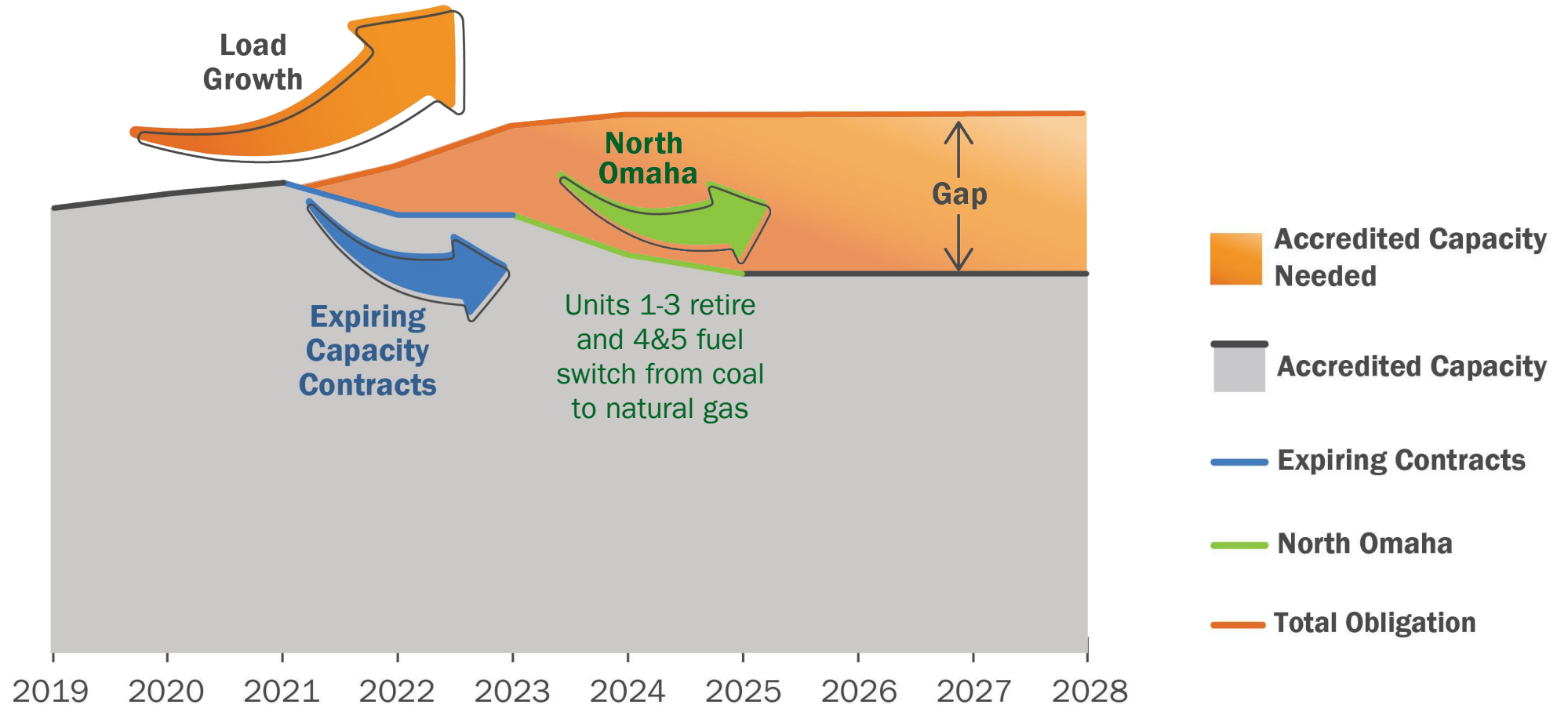
● **Affordability**

● **Reliability & Resiliency**

● **Environmental Sensitivity**

● **External Decision**

Why Now: Continued Capability to Serve Our Growing Communities



Working Towards Solutions

Problem

- Changing generation landscape
- Supporting the needs of our growing communities
- Maintaining reliability and resiliency

+

Framework

- OPPD's Mission
Affordable, Reliable & Environmentally Sensitive
- Strategic Directives
- Legal and Regulatory Obligations

=

Solution

- **Large utility scale solar** with natural gas backup
- Modernized natural gas assets; replacement for North Omaha Units 1-3 retirements and Units 4 & 5 refuel to natural gas
- Voltage support device(s)
- Request for Proposal (RFP) results will finalize the modeling conclusions

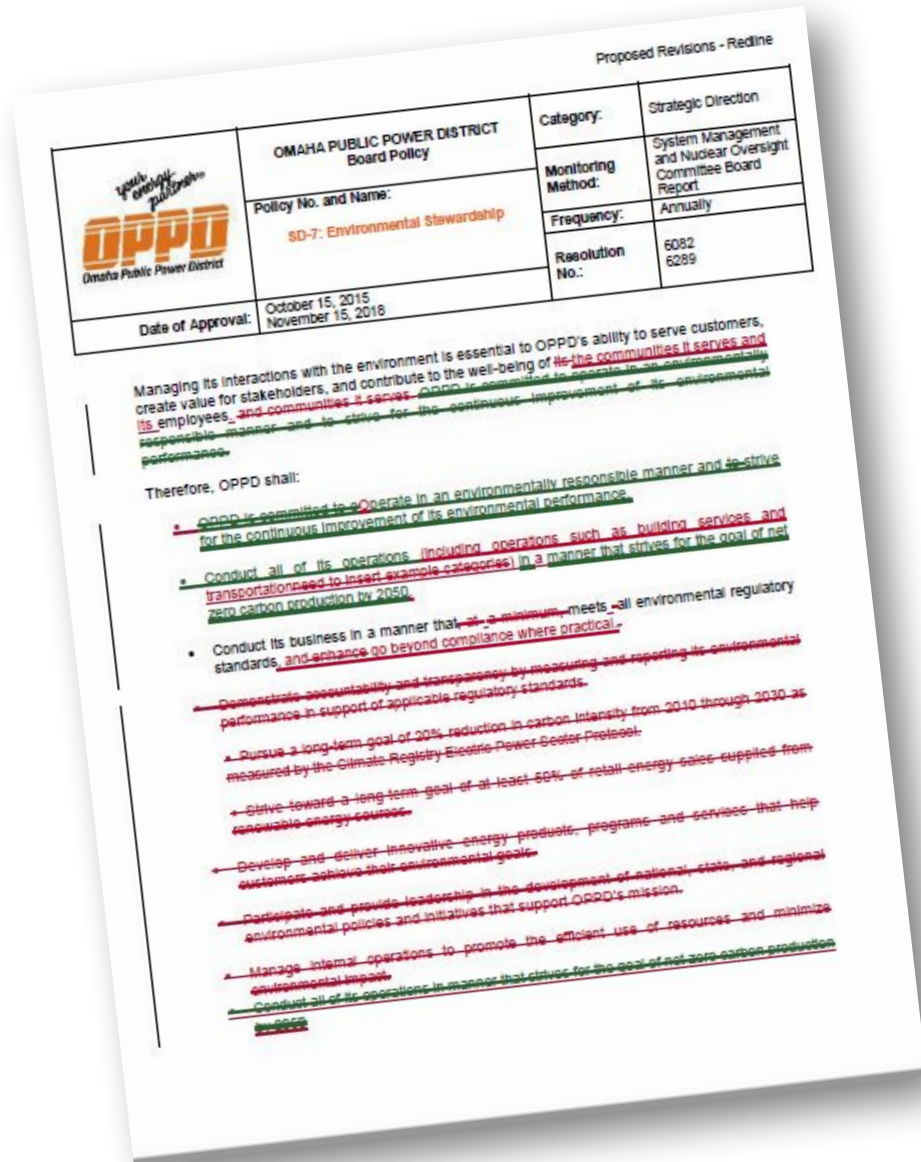
What Else

Preparing for the future



We're facing dynamic trends that continue to shape the future of the industry.

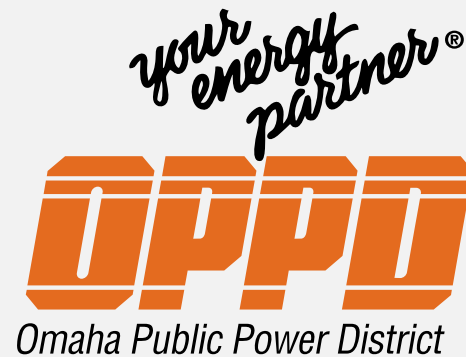




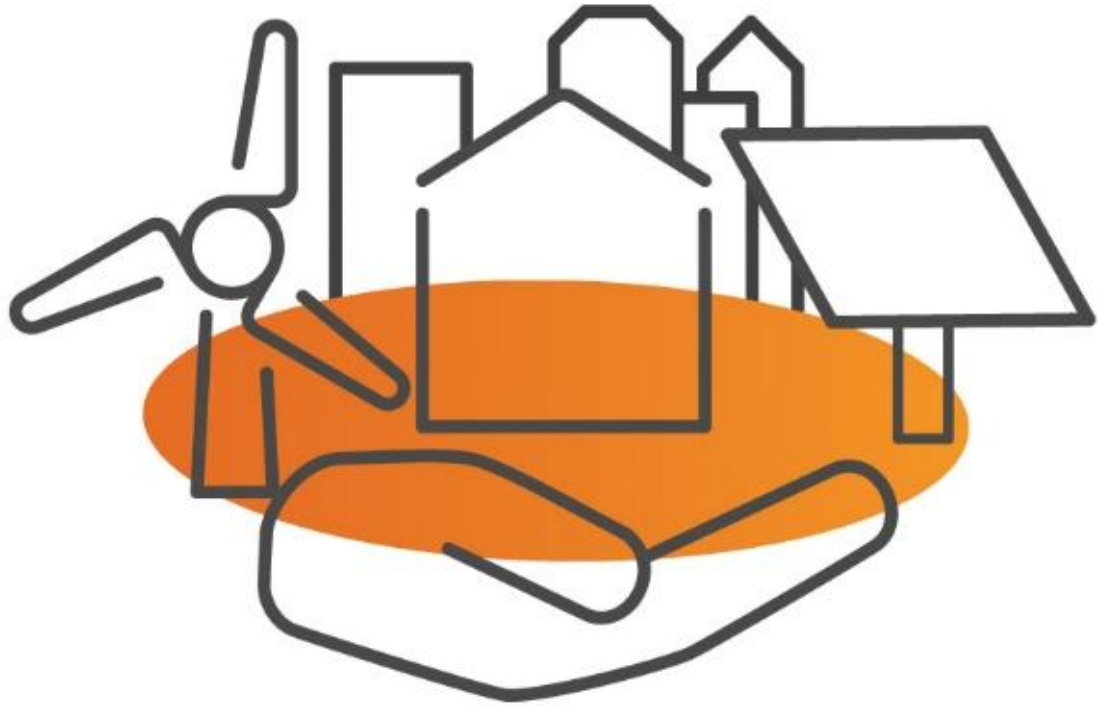
Strategic Directive 7 (SD-7) proposed revisions open for comment:

- Proposed **net zero by 2050** directional goal
- Clearer, simplified format

We are strengthening our core and creating our future



- **Customer engagement**
- **Pathways to decarbonization**
- **Electric system evaluation & modernization**
- **Technology platform**
- **Workplace transformation**



Leading the way we
power the future

...together