



# Board Policy Strategic Directive No. BP-SD-11

## Research & Development Review

THE  
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PEOPLE**

NPPD Board of Directors Meeting  
Strategic Business Matters  
June 2023

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# BP-SD-11, Research & Development

*“The Board encourages management to actively pursue investments in research and development in the energy industry that aligns with the District’s strategy, considering both the relative risks and possible benefits to Nebraska Public Power District customers”*

# NPPD Alignment with Directive

- 1. Partnership with University of Nebraska-Lincoln (UNL) for the Nebraska Center for Energy Sciences Research (NCESR)**
  - Currently reviewing Cycle 18 Requests for Proposals, Summer interns, Letters of Support, Energy Center Chronicles
- 2. Membership with Electric Power Research Institute (EPRI)**
  - Full Membership, Nuclear, Low Carbon Resource Initiatives (LCRI), Self-directed and Supplemental R&D (Reciprocating Internal Combustion Engine (RICE), Concrete Thermal Storage, Bulk Energy Storage, etc.)
- 3. Support for Generation Strategies' Projects**
  - Universities, Engineering Firms, National Labs, Energy & Environmental Research Center (EERC), U.S. Department of Energy (DOE), State of Nebraska, Various Industry Groups

# NPPD Alignment with Directive (Cont'd)

## Current Project Activities:

- ✓ 31 NDAs signed over a 3-year period
- ✓ Nebraska Environmental Trust (NET) grants with UNL on Western Nebraska Carbon Sequestration geological sequestration opportunities
- ✓ Water Electrodialysis Reversal Pilot at GGS – work with DOE
- ✓ Ethanol based Hydrogen
- ✓ B&W Study (FEL-3 estimate) – bubbling fluidized bed (BFB) – transition the cyclone fired Unit 2 boiler at Sheldon Station using biomass

# NPPD Alignment with Directive (Cont'd)

## Current Project Activities (Cont'd):

- ✓ Small Modular Reactors (SMRs)
- ✓ Monolith
- ✓ Hydrogen – Mix with natural gas for Gas turbines / power generation
- ✓ Carbon sequestration, Terrestrial Sequestration, Carbon Credits, Carbon Offsets, Biochar
- ✓ Alternate fuels – Methanol, Ammonia, Dimethyl Ether, Renewable Diesel, Urea
- ✓ Renewable Natural Gas
- ✓ Gasification, Pyrolysis, Torrefaction, Autothermal pyrolysis (ATR)
- ✓ Energy Storage – Electric (Battery), Thermal, CAES, Gravity, Pumped Storage Hydro

# NPPD Alignment with Directive (Cont'd)

## Current DOE Project Activities:

- DE-FOA-0002779 – Regional Clean Hydrogen Hubs – Midcontinent Clean Hydrogen Hub – MCH2 - **submitted**
- DE-FOA-0002962 – Carbon Capture Demonstration Projects – CO<sub>2</sub> Capture at GGS Unit 2 – **submitted**
- DE-FOA-0002970 – Energy Improvement in Rural or Remote Areas – Multi Fueled RICE Engines – **submittal due June 23**
- DE-FE0031993 – 21<sup>st</sup> Flexible Gasification of Coal and Biomass to Generate Electric Power and Carbon Free-Hydrogen Co-Product - **Awarded (ongoing)**



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## Questions

Stay connected with us.



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