Power with Purpose Update
Back-up Natural Gas Plant Sites

September 15, 2020
Agenda

• Power with Purpose Overview
• Schedule
• Solar Update
• Gas Sites
• Layouts and renderings
• Stakeholder Engagement Update
• Next steps
Define the Problem - OPPD Load & Capability

Units 1-3 retire and 4&5 fuel switch from coal to natural gas
Power with Purpose Solution

Challenges

- 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

Benefits

- Ensures OPPD is able to meet the needs of our customer-owners while maintaining affordability, reliability and resiliency.
- Carbon dioxide (CO2) emissions are expected to be reduced by 80-90% over current North Omaha emissions.
- In total, over our journey from 2010-2024, we estimate a 30% reduction in CO2 emissions.
- OPPD expects to maintain no general rate increase from these solutions.
Solution: Energy in Harmony
Solar + Gas

Backup Natural Gas

• Allows for quick response to reliability and resiliency needs caused by weather and other emergent events
  – Startup time ~20 minutes

• Allows refueling of coal assets with natural gas at North Omaha Station
Why Natural Gas?

Accredited capacity

Cost effective

Cleaner energy, efficient fuel

Supports renewable energy integration

Complements up to 600 MW of planned solar facilities

Important step in our journey towards decarbonization
About how tall will the facilities be?

- **65–95 ft.**
  - RICE Natural Gas Facility

- **80–100 ft.**
  - Sarpy County Landfill (future landfill cap)

- **130–150 ft.**
  - Average 345kv Transmission Tower

- **80–180 ft.**
  - Combustion Turbine Natural Gas Facility

- **200 ft.**
  - Nebraska Crossing Water Tower

- **280 ft.**
  - Average Wind Turbine
# Power Generation Siting Considerations

<table>
<thead>
<tr>
<th>Social</th>
<th>Environmental</th>
<th>Engineering</th>
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<tbody>
<tr>
<td>Businesses</td>
<td>Conservation Areas</td>
<td>Airports</td>
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<tr>
<td>Cemeteries</td>
<td>Federal &amp; State Lands</td>
<td>Cost</td>
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<td>Places of Worship</td>
<td>Floodplains</td>
<td>Highways</td>
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<td>Commercial/Industry</td>
<td>Historic &amp; Archaeological Sites</td>
<td>Railroads</td>
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<td>Agriculture</td>
<td>Wooded Areas</td>
<td>Structures (other)</td>
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<td>New &amp; Platted Developments</td>
<td>Wetlands/Waterways</td>
<td>Irrigation/Pivots</td>
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<td>Schools</td>
<td>Threatened &amp; Endangered Species</td>
<td>Wells</td>
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<td>Residences/Homes</td>
<td>Access to Transmission</td>
<td>Site Topography (flat land)</td>
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Power with Purpose Timeline

**Modeling**
- Q4, 2019: Integrated Modeling (generation, financial, transmission, etc.)
- Q1, 2020: Integration Modeling
- Q2, 2020: Integration Modeling
- Q3, 2020: Integration Modeling
- Q4, 2020: Integration Modeling

**Solar**
- Q4, 2019: RFP process: evaluation, technical review, negotiations
- Q1, 2020: RFP process: evaluation, technical review, negotiations
- Q2, 2020: RFP process: evaluation, technical review, negotiations
- Q3, 2020: RFP process: evaluation, technical review, negotiations
- Q4, 2020: RFP process: evaluation, technical review, negotiations

**Natural Gas**
- Q4, 2019: Gas supply infrastructure work
- Q1, 2020: Gas supply infrastructure work
- Q2, 2020: Gas supply infrastructure work
- Q3, 2020: Gas supply infrastructure work
- Q4, 2020: Gas supply infrastructure work

**Regulatory**
- Q4, 2019: SPP Applications – 4.30.20
- Q1, 2020: PRB Filing
- Q2, 2020: PRB Hearing – up to 60-day approval
- Q3, 2020: Regulatory Approvals
- Q4, 2020: Regulatory Approvals

**Stakeholder Outreach**
- Q4, 2019: Key Stakeholder Siting Discussions
- Q1, 2020: State of the Utility (broad education)
- Q2, 2020: Community Conversations & Updates
- Q3, 2020: Community Conversations & Updates
- Q4, 2020: Community Conversations & Updates
Solar Update
Solar Progress Update

• Continued focus on evaluating best value projects that support accredited capacity and system resiliency

• Development of OPPD’s first utility-scale solar form PPA in preparation of negotiations with high-potential projects

• Multiple projects and locations are being considered to meet the full 400-600 MW Board authorized amount
New Gas Generation Sites and Technologies
New Gas Generation Papillion (Sarpy County South) Site

Technology: Two simple-cycle combustion turbines

Location:
- Papillion
- Between 156th & 168th Streets
- Between Fairview and Platteview Roads
New Gas Generation Military Site

Technology: Six to Nine Reciprocating Internal Combustion Engines

Location:
- 120th & Military Ave.
- Next to MUD facility
Technology Overview

**Combustion Turbines (CTs)**
- Simple-cycle
- Quantity: 2 units
- MW total: ~ 400 to 450 MW
- Dual fuel and hydrogen capable
- Peaking facility
- Noise compliance to meet local ordinances
- Visual screening for aesthetics
- Quick ramp capability with emissions compliance (~ 10-18 minutes)

**Reciprocating Internal Combustion Engines (RICE)**
- Quantity: 6 to 9 units
- MW total: ~ 100 to 150 MW
- Dual fuel capable
- Peaking facility
- Noise compliance to meet local ordinances
- Visual screening for aesthetics
- Quick ramp capability with emissions compliance (< 5 minutes)
Representative OPPD Facilities

**Combustion Turbines (CTs)**
- Cass County Simple Cycle CTs

**Reciprocating Internal Combustion Engines (RICE)**
- Elk City RICE
Papillion (Sarpy County South) Site Layout and Rendering Perspective I
## Noise Levels

<table>
<thead>
<tr>
<th>Noise Level</th>
<th>dB (in decibels) / Example</th>
<th>Note</th>
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<tbody>
<tr>
<td>Painful/dangerous</td>
<td>140, Fireworks</td>
<td>Use hearing protection</td>
</tr>
<tr>
<td>Uncomfortable</td>
<td>120, Jet planes</td>
<td>Dangerous &gt; 30 secs</td>
</tr>
<tr>
<td>Very loud</td>
<td>110, Sporting event/concert 90, Blender/hairdryer</td>
<td></td>
</tr>
<tr>
<td>Over 85dB for extended periods can cause permanent hearing loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loud</td>
<td>80, Alarm clocks 70, Traffic</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td>60, Normal conversation/dishwasher 50, Moderate rainfall</td>
<td></td>
</tr>
<tr>
<td>Soft</td>
<td>40, Quiet library 30, Whisper</td>
<td></td>
</tr>
<tr>
<td>Faint</td>
<td>20, Leaves rustling</td>
<td></td>
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Source: American Academy of Audiology
Papillion (Sarpy County South) Site Concept Plan

City of Papillion Code:
Max: 55 dBA from 10 pm to 7 am
70 dBA from 7 am to 10 pm
Papillion (Sarpy County South) Site, Current

Site
- West of SC Landfill
- Between Fairview & Platteview
- Between 156th & 168th Streets

Pedestrian View
- Platteview Road
- Looking north east
Papillion (Sarpy County South) Site, Future Rendering

Site
- Generation and substation
- 2 simple cycle Combustion Turbines

Rendering/Landscaping
- None applied
Papillion (Sarpy County South) Site Rendering/Landscaping

Site
- Generation and substation
- 2 simple cycle Combustion Turbines

Rendering/Landscaping
- Stacks color coordinated green
- Pine tree buffer around site
Papillion (Sarpy County South) Site Rendering Perspective II
Papillion (Sarpy County South) Site, Current

Site
- West of SC Landfill
- Between Fairview & Platteview
- Between 156th & 168th Streets

Pedestrian View
- 168th Street
- Looking east
Papillion (Sarpy County South) Site, Future Rendering

Site
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Papillion (Sarpy County South) Site Rendering/Landscaping

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Military Site Layout and Rendering Perspective I
Military Site: 120th & Military Ave.

- MUD partnership
- Gas supply synergies
- Co-location with another utility
Military Site Concept Plan

Shown: Noise profile for 9 RICE

City of Omaha Code:
Max: 55 dBA from 9 pm to 7 am
60 dBA from 7 am to 9 pm
Military Site, Current

- View from Rambleridge Road
- Existing Conditions, September 2020

Pedestrian View
- Looking northwest
Military Site Rendering/Landscaping

Site
- Generation and substation
- 6-9 Reciprocating Engines
- Transmission Line Routing

Rendering/Landscaping
- Without Tree buffer around site
Military Site Rendering/Landscaping

Site
- Generation and substation
- 6-9 Reciprocating Engines
- Transmission Line Routing

Rendering/Landscaping
- Tree buffer around site
Military Site Rendering Perspective II
Military Site, Current

Site
- Southwest view from Military Road
- Existing Conditions, September 2020
Military Site Rendering/Landscaping

Site
- Generation and substation
- 6-9 Reciprocating Engines
- Transmission Line Routing

Rendering/Landscaping
- Without Tree buffer around site
Military Site Rendering/Landscaping

Site
- Generation and substation
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Stakeholder Outreach
A QUICK REVIEW OF OUR APPROACH

PHASE I –
(DELAYED SLIGHTLY DUE TO COVID-19)
Broad community listening & education
District-wide State of Utility (moved online)

PHASE II
Conversations and updates with potentially impacted areas as modeling continues

PHASE III
Engagement with those directly impacted, including community leaders

ONGOING
Outreach and communication to close the loop
Power with Purpose Timeline

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- Q4, 2020: RFP process: evaluation, technical review, negotiations

**Natural Gas**
- Q4, 2019: RFP process: evaluation, technical review, major equipment RFPs, followed by EPC RFPs
- Q1, 2020: Conduct site technical assessment, Gas supply infrastructure work
- Q2, 2020: Gas supply infrastructure work
- Q3, 2020: Gas supply infrastructure work
- Q4, 2020: Gas supply infrastructure work

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- Q4, 2020: Community Conversations & Updates

**Timeline**
- Today: Integrated Modeling (generation, financial, transmission, etc.)

**Events**
- RFP process: evaluation, technical review, negotiations
- Conduct site technical assessment
- Gas supply infrastructure work
- SPP Applications – 4.30.20
- PRB Filing
- PRB Hearing – up to 60-day approval
- Key Stakeholder Siting Discussions
- State of the Utility (broad education)
- Community Conversations & Updates
EXECUTIVE SUMMARY

As Power with Purpose enters a new phase, OPPD will intensify its current communication and outreach efforts to achieve the following objectives:

1) Increase overall awareness of Power with Purpose across the service area, with a focus on those most impacted (messaging to include benefits of the plan and the need for both solar and natural gas)
2) Reinforce its core values of caring for one another, honoring our communities and a passion to serve
3) Deliver on Phase III of the current Power with Purpose outreach approach

With a strong, integrated effort across the district, and a commitment to the IAP2 methodology (inform), this effort will reinforce key messages: 1) Power with Purpose is the best way for us to serve our growing communities—it balances affordability, reliability/resiliency and environmental sensitivity 2) OPPD continues to lead, collaborate and innovate so our communities continue to thrive 3) The work we do today with Power with Purpose will serve us well in the future.

The team will use an integrated, multi-channel approach to accomplish these objectives.
We continue to use an integrated approach to keep employees and stakeholders updated

Employees first
• Focus on leader communication
• Reinforce messages in videos, ON stories, all-employee town hall

Build broad awareness
• Use all available media to continue education about Power with Purpose
• Begin with digital and radio, continue conversation with out of home, print, the Wire, OPPD Community Connect and more

Connect 1:1 when possible
• Use multi-channel communication methods to inform and connect
• This will include continued community conversations, direct outreach to HOAs, influencers, etc. and dedicated public outreach meetings
KEY TACTICS INCLUDE:

- Employee town halls, videos, leader communication
- Digital, social, billboard and radio broad awareness campaign across service area
- Targeted social media and digital campaigns for those most likely impacted, as possible
- Updates on oppdcommunityconnect.com
- OPPD the Wire content, with outreach to media
- Direct mail and postcards to those living adjacent to sites
- Dedicated outreach meetings (Sept. 29-30)
- 1:1s with key stakeholders and elected officials
- Outreach to neighborhood associations
- Message to key stakeholders/interest groups
- Mapping of employees, retirees and influencers
Sample of Campaign/Awareness Items

The future is bright.

We’re planning for the future.

Virtual Public Information Meetings

168th & Fairview RD - Papillion
September 29th
6-7pm

120th & Military - Omaha
September 30th
6-7pm

More at OPPDCommunityConnect.com
NEXT STEPS

• Launch stakeholder campaign, manage and measure
• Complete Nebraska Power Review Board Filing and Hearing
• Continue Solar Sourcing Activities
• Issue Natural Gas Equipment Asset RFPs
• Continue Natural Gas Fuel Supply Vendor Discussions
• Initiate Transmission and Substation Execution Phase
• Provide timely updates on progress