THE POWER OF PEOPLE

Energy Development

(Through Environmental Eyes)

2025 Power Summit

Tim Rogers – Corporate Environmental Manager

Nebraska Public Power District

Always there when you need us

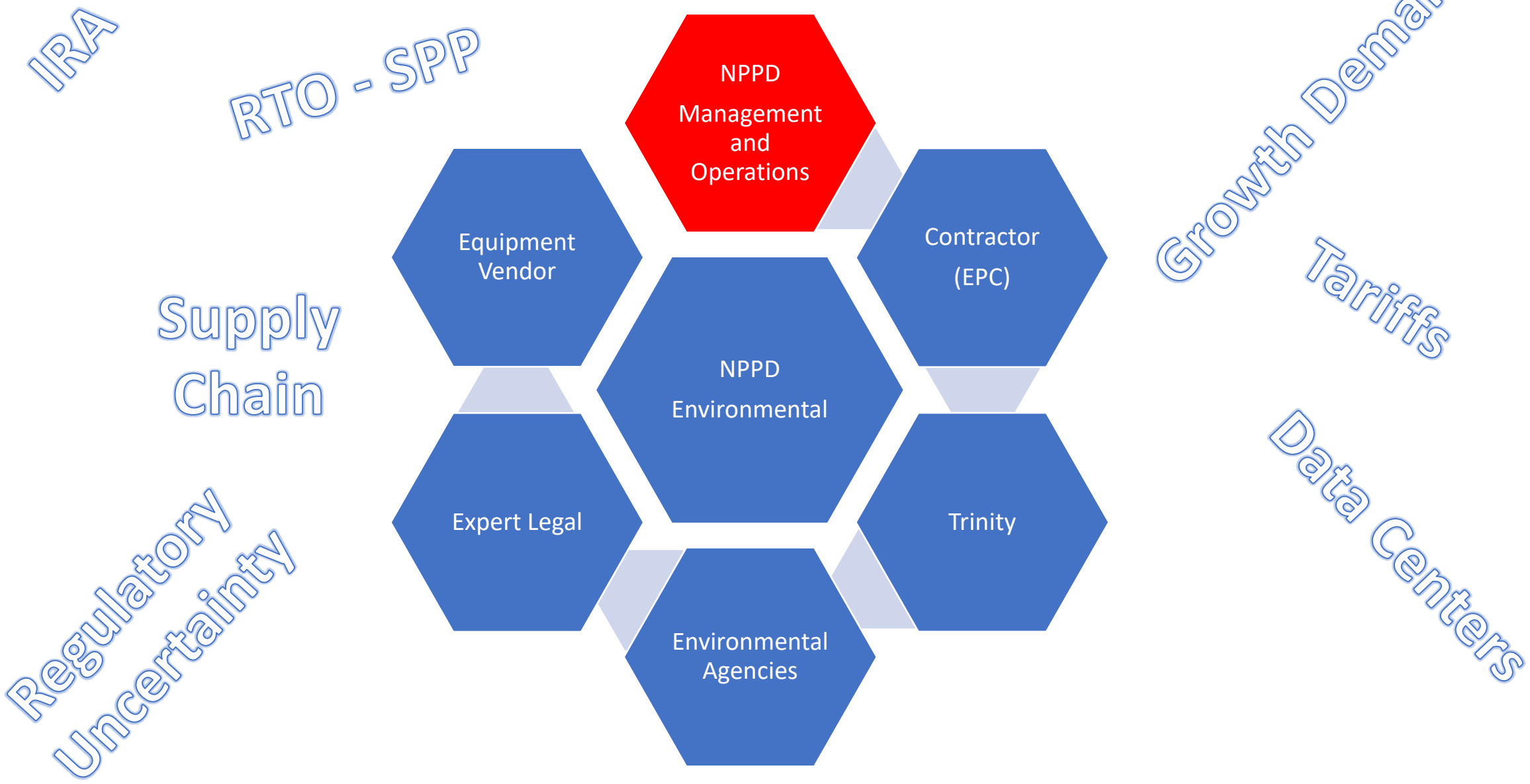

Princeton Road Station
SW 42nd Street
W Princeton Rd

Environmental

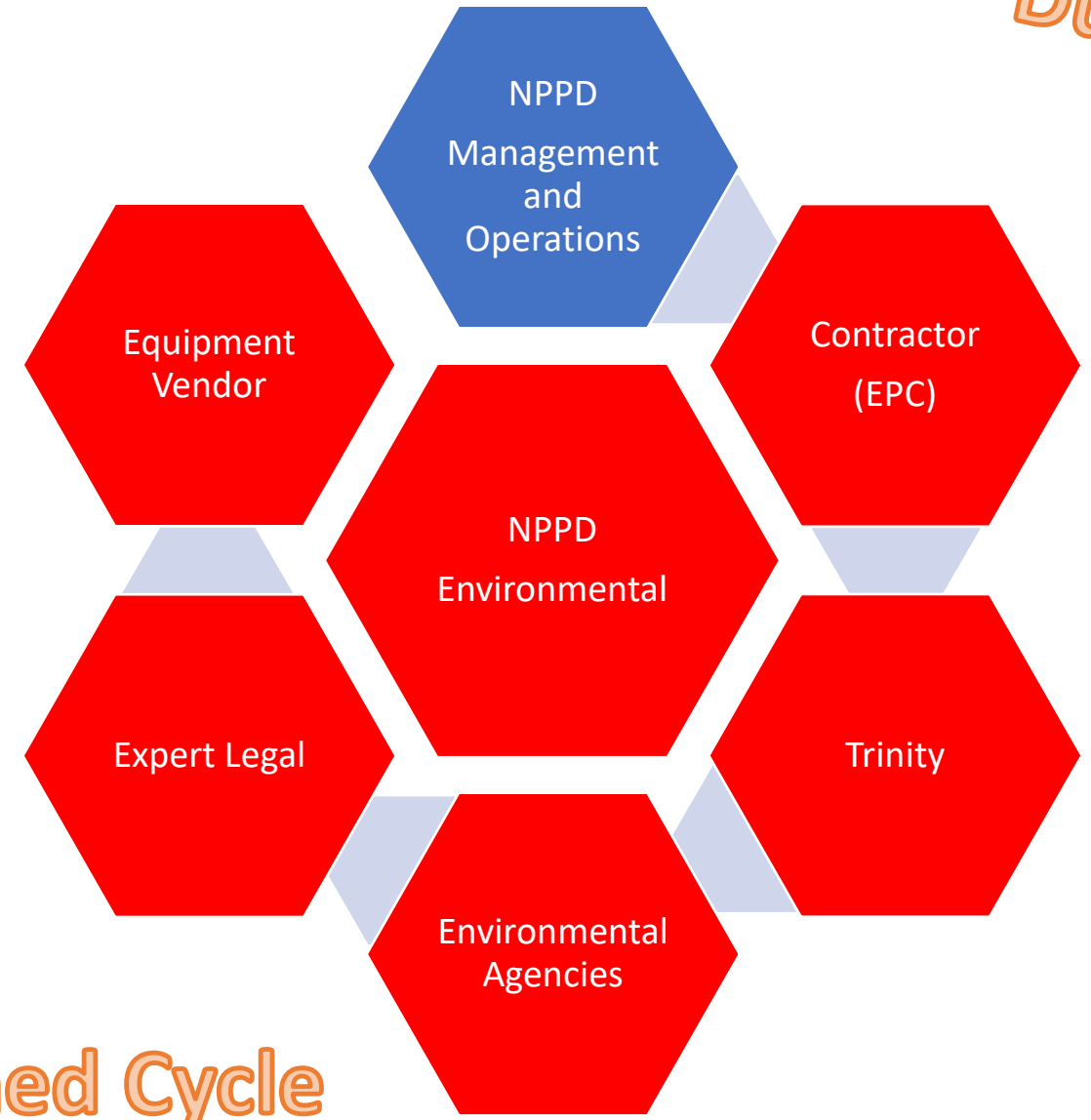
Players


NPPD
Management and Operations
Equipment Vendor
Contractor (EPC)
NPPD
Environmental
Expert Legal
Trinity
Environmental Agencies

Crystal Ball – How Many MW's?



Environmental



SCR

Dual Fuel

Stack Height

Simple Cycle

AA v Urea

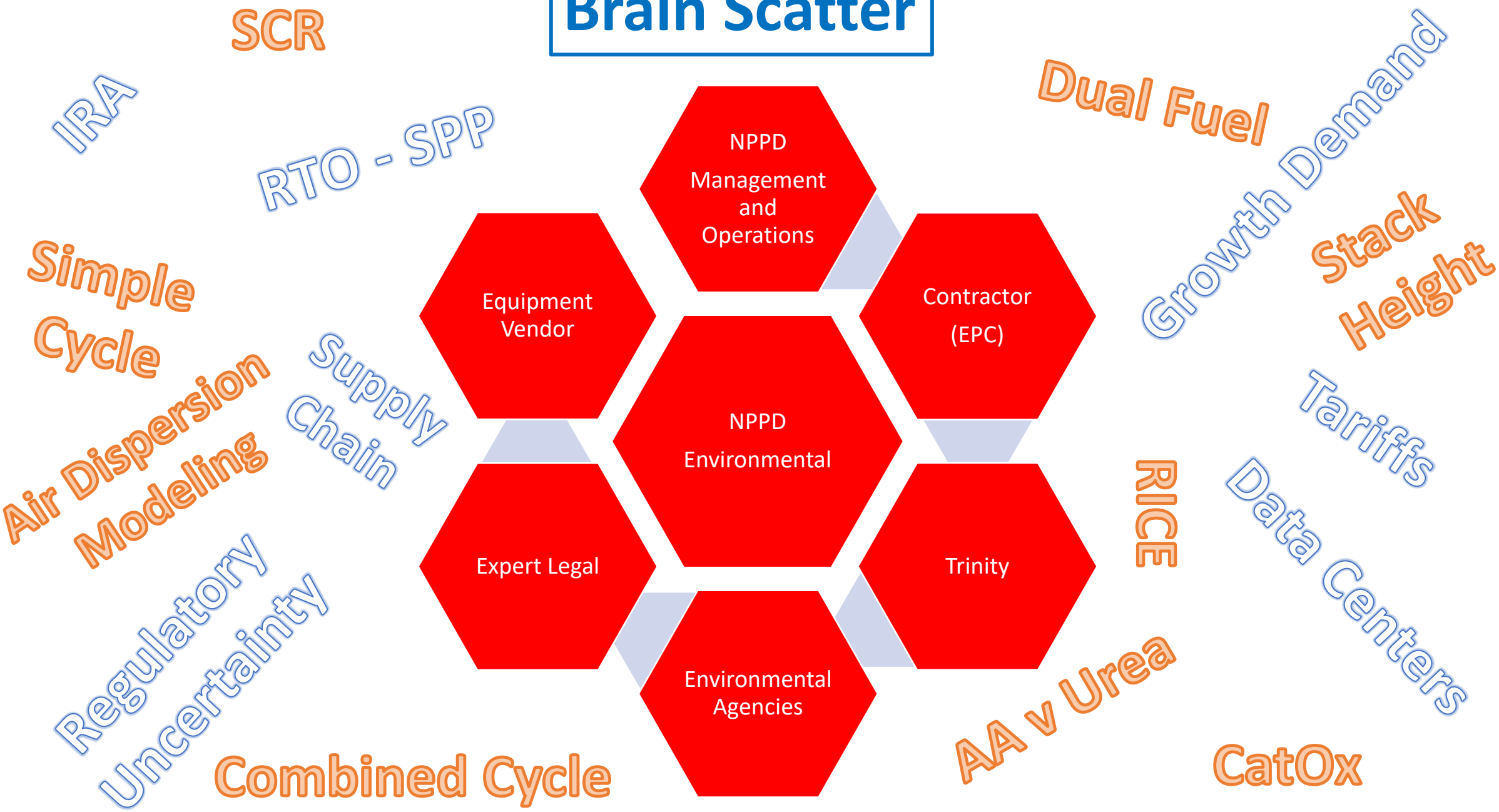
RICE

Air Dispersion Modeling

Combined Cycle

CatOx

Brain Scatter



Air Quality

Prevention of Significant Deterioration (PSD) of National Ambient Air Quality Standard (NAAQS)

How do you protect the NAAQS

1. **Best Available Control Technology (BACT)** – ensure that company install the best available control technology.
2. **Ambient Air Quality Analysis** – and that they comply with NAAQS through modeling.

Best Available Control Technology (BACT)

BACT analysis establishes an emission limit that dictates the type of pollution control installed.

Natural Gas Combustion Turbine –

- SCR (NO_x)
- Catalytic Oxidizer (CO and VOC)
- Using Natural Gas

Ambient Air Quality Analysis

Main Goal – Protect the NAAQS

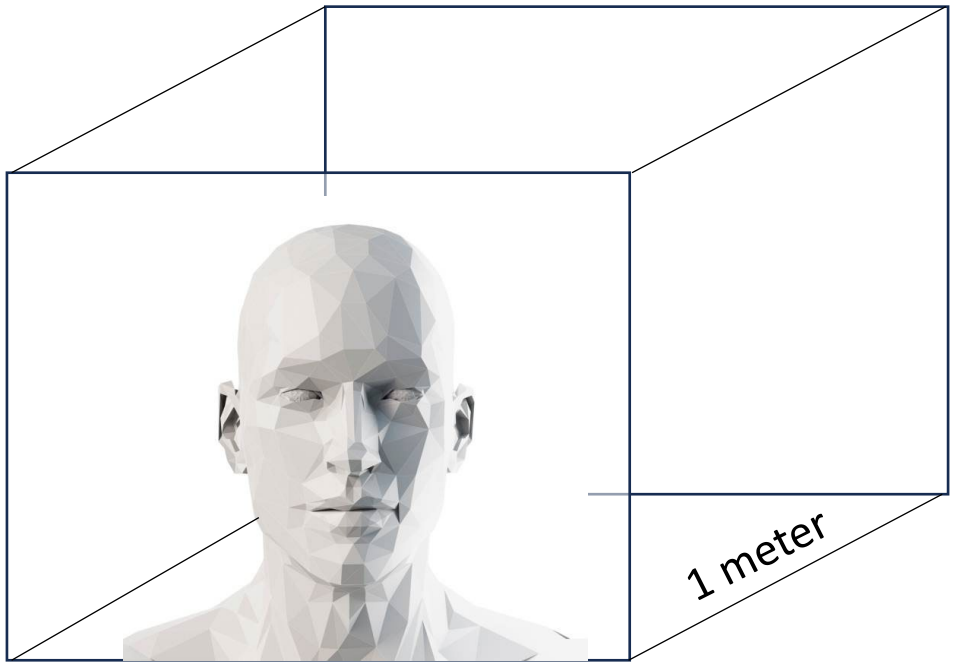
- Particulate Matter (PM 2.5 and 10)
- Nitrogen Oxides (NO_x)
- Sulfur Dioxides (SO_2)
- Carbon Monoxide (CO)
- Ozone (O_3)
- Lead (Pb)

National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year
	primary	1 hour	35 ppm	
Lead (Pb)	primary and secondary	Rolling 3 month average	0.15 µg/m3	Not to be exceeded
Nitrogen Dioxide (NO2)	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	primary and secondary	1 year	53 ppb	Annual Mean
Ozone (O3)	primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)				
PM2.5	primary	1 year	9.0 µg/m3	annual mean, averaged over 3 years
	secondary	1 year	15.0 µg/m3	annual mean, averaged over 3 years
PM10	primary and secondary	24 hours	35 µg/m3	98th percentile, averaged over 3 years
	primary and secondary	24 hours	150 µg/m3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO2)	primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

PM2.5 NAAQS – new annual standard

9 ug/m_3 (microgram/cubic meter)



Ambient Air Quality Analysis

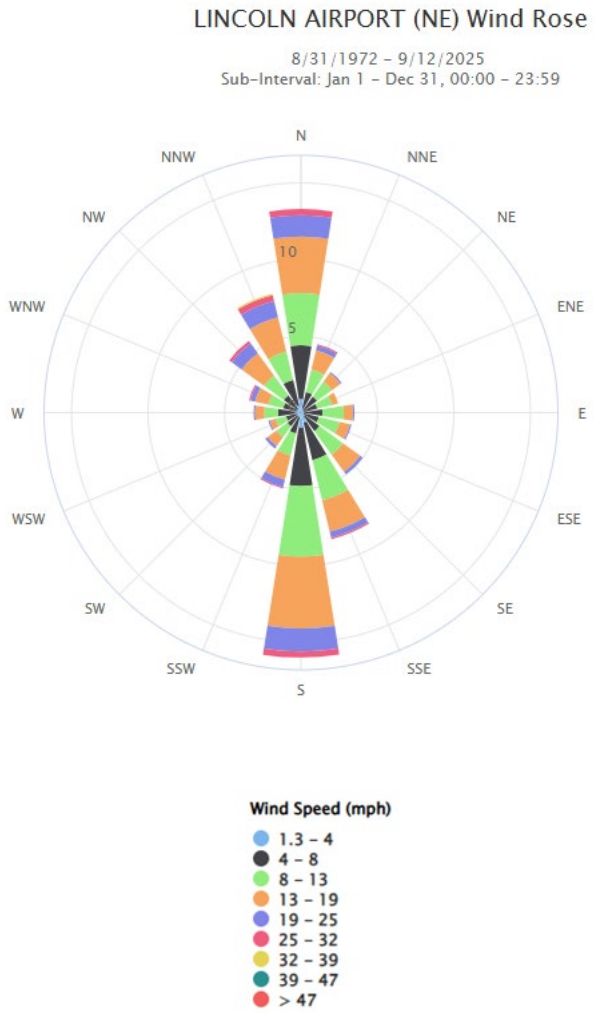
Tool used to assess compliance with the NAAQS:

Air Dispersion Model

Air Dispersion Modeling - Tools

- **Source:** Better control, lower limit, taller stack
- **Source orientation:** Predominate wind direction
- **Other sources in area:** Better controls, taller stacks
- **Other sources:** Eliminate source
- **Enlarge property boundary:** Buy land
- **Property:** Close roads
- **Different location:** Green field

Air Dispersion Modeling
Stack Height



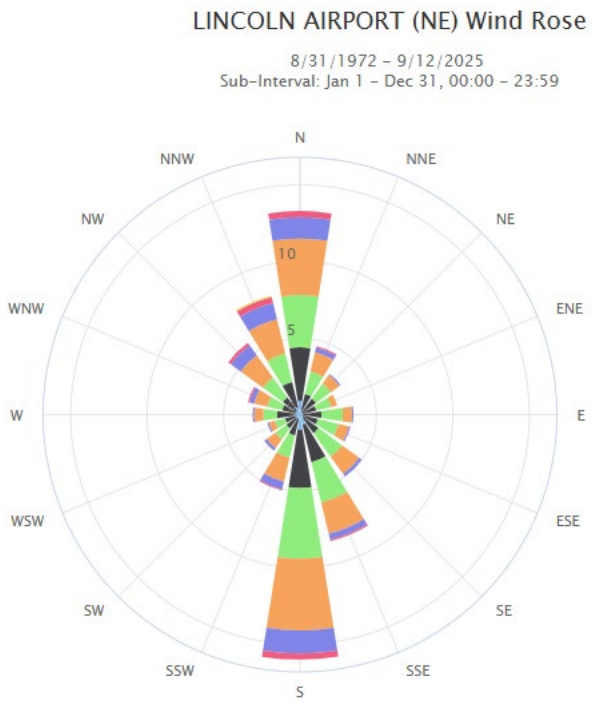
PM2.5 24hr NAAQS - All Sources
4 CTs - Combined Cycle

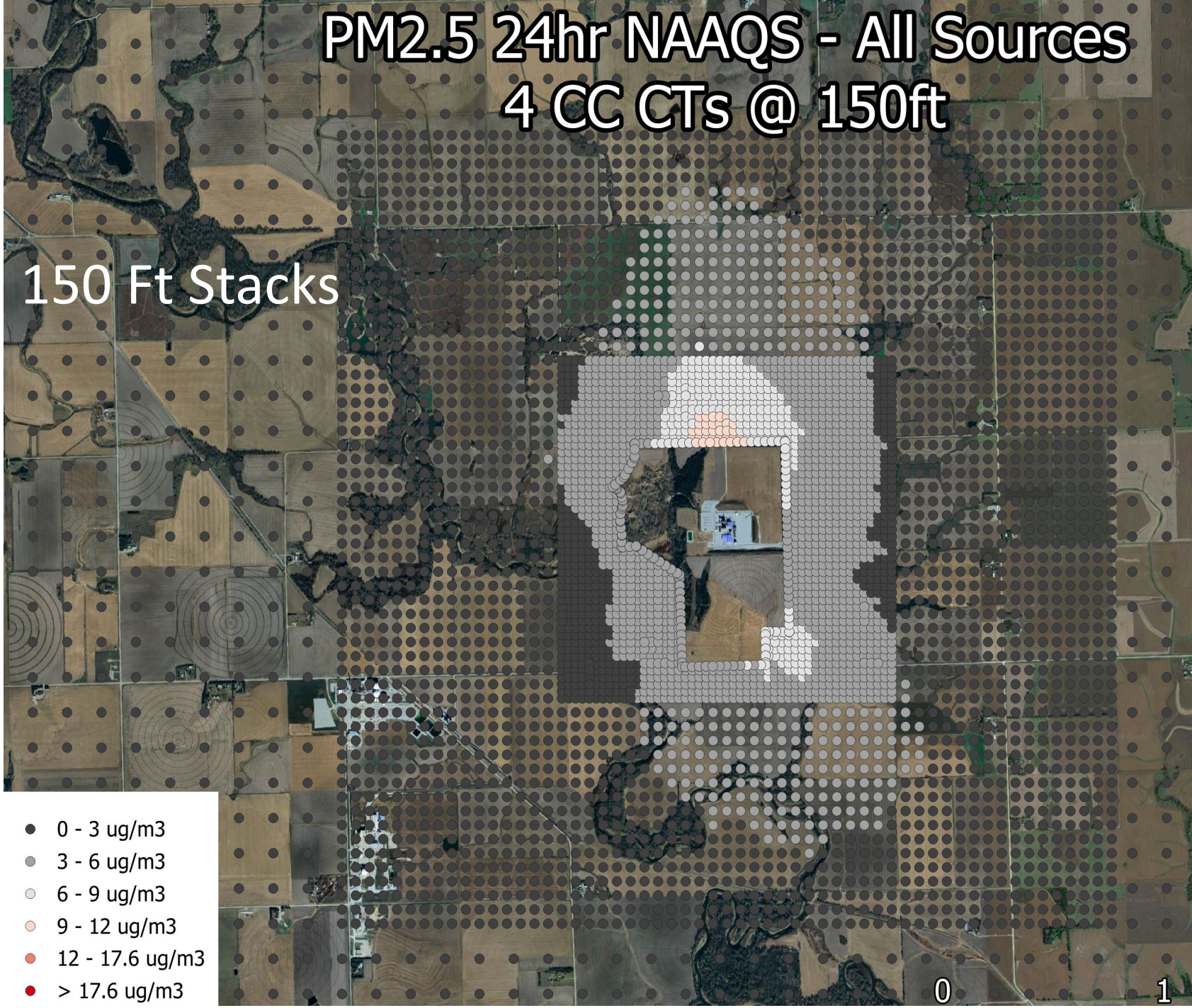
120 Ft Stacks

- 0 - 3 ug/m3
- 3 - 6 ug/m3
- 6 - 9 ug/m3
- 9 - 12 ug/m3
- 12 - 17.6 ug/m3
- > 17.6 ug/m3

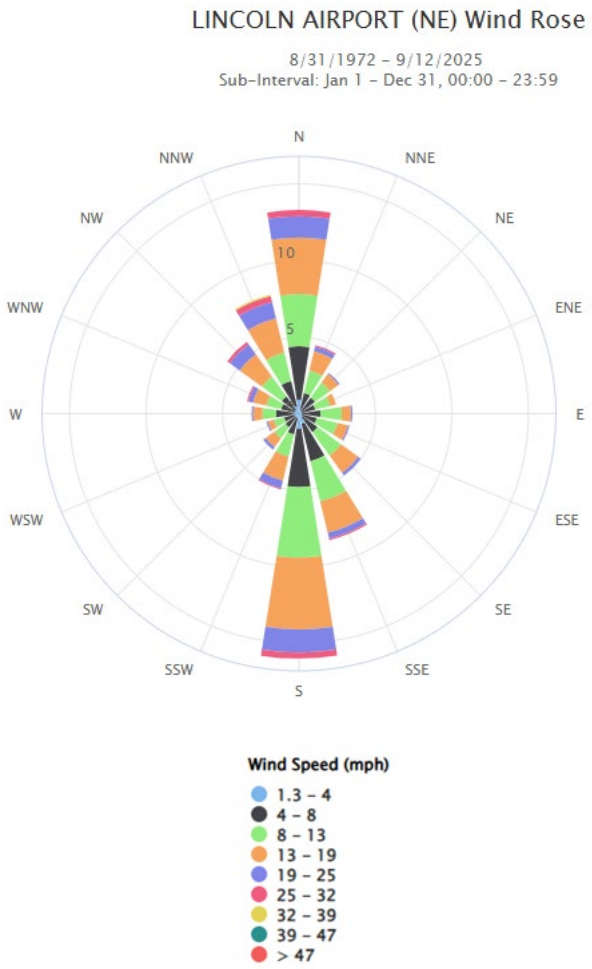
0

1


LINCOLN AIRPORT (NE) Wind Rose
8/31/1972 – 9/12/2025
Sub-Interval: Jan 1 – Dec 31, 00:00 – 23:59
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
10
5
Wind Speed (mph)
1.3 – 4
4 – 8
8 – 13
13 – 19
19 – 25
25 – 32
32 – 39
39 – 47
> 47


PM2.5 24hr NAAQS - All Sources
4 CC CTs @ 150ft
150 Ft Stacks
0 - 3 ug/m3
3 - 6 ug/m3
6 - 9 ug/m3
9 - 12 ug/m3
12 - 17.6 ug/m3
> 17.6 ug/m3
0
1

Air Dispersion Modeling
Source Orientation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N
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Wind Speed (mph)
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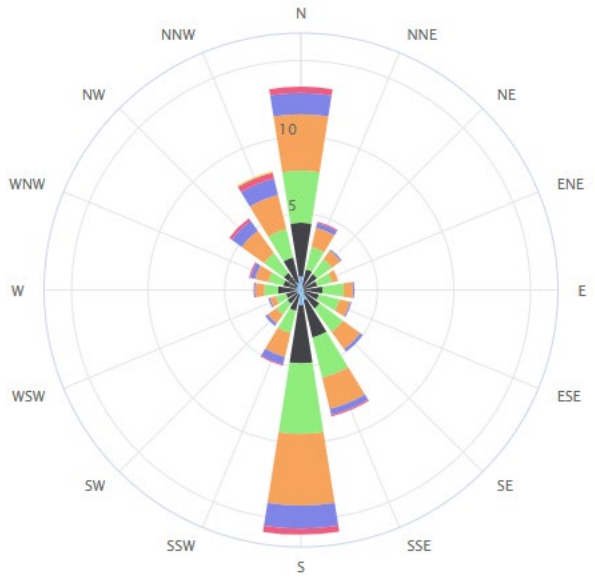
19 – 25
25 – 32
32 – 39
39 – 47
> 47


CT
CT
CT
CT
12 RICE

LINCOLN AIRPORT (NE) Wind Rose

8/31/1972 – 9/12/2025
Sub-Interval: Jan 1 – Dec 31, 00:00 – 23:59



Wind Speed (mph)

- 1.3 – 4
- 4 – 8
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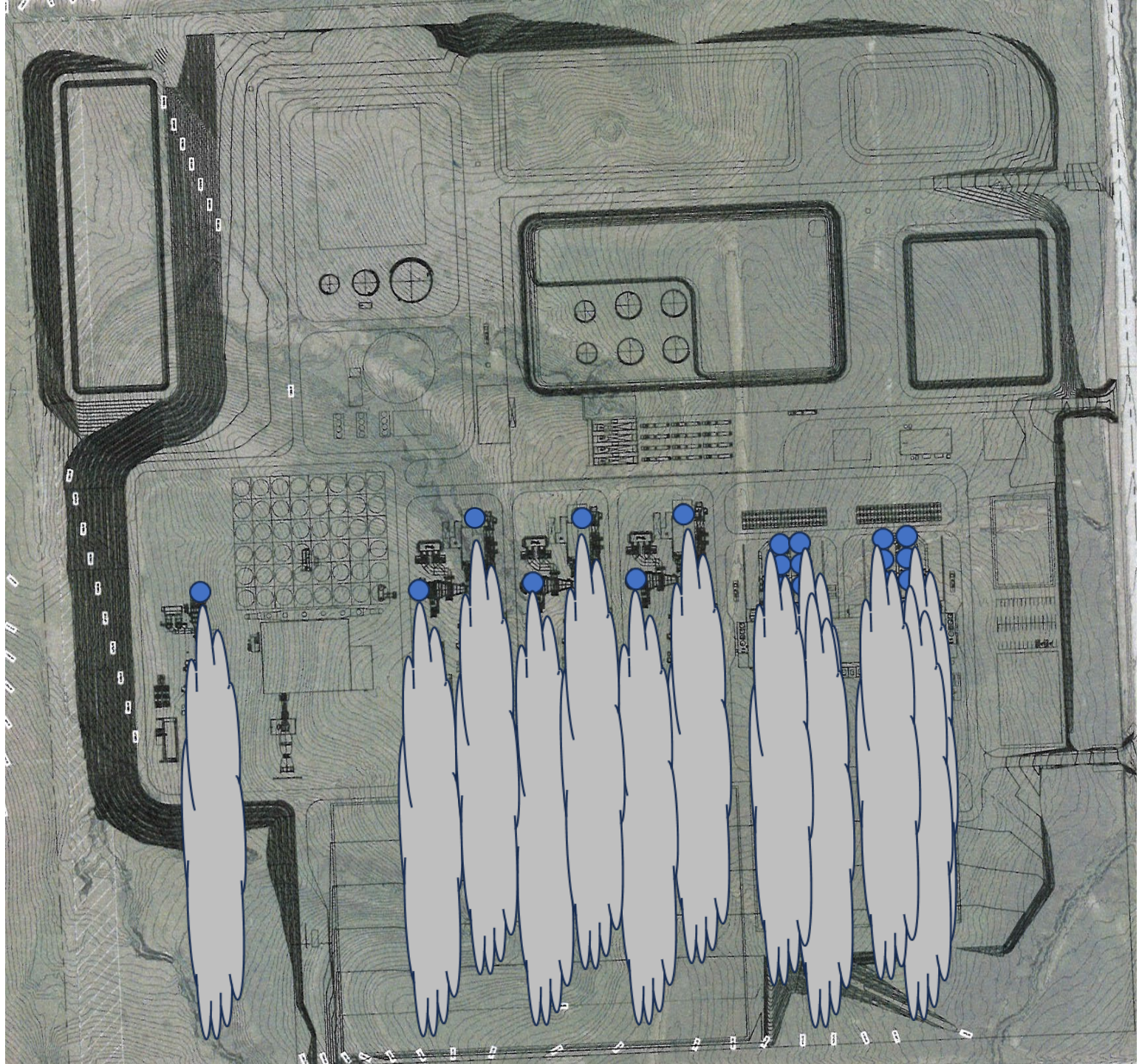
- 13 – 19
- 19 – 25
- 25 – 32
- 32 – 39
- 39 – 47
- > 47



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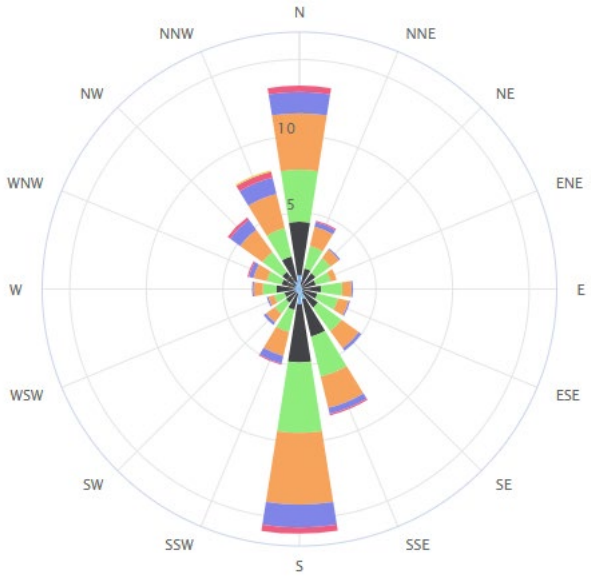

Wind Speed (mph)

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- 4 – 8
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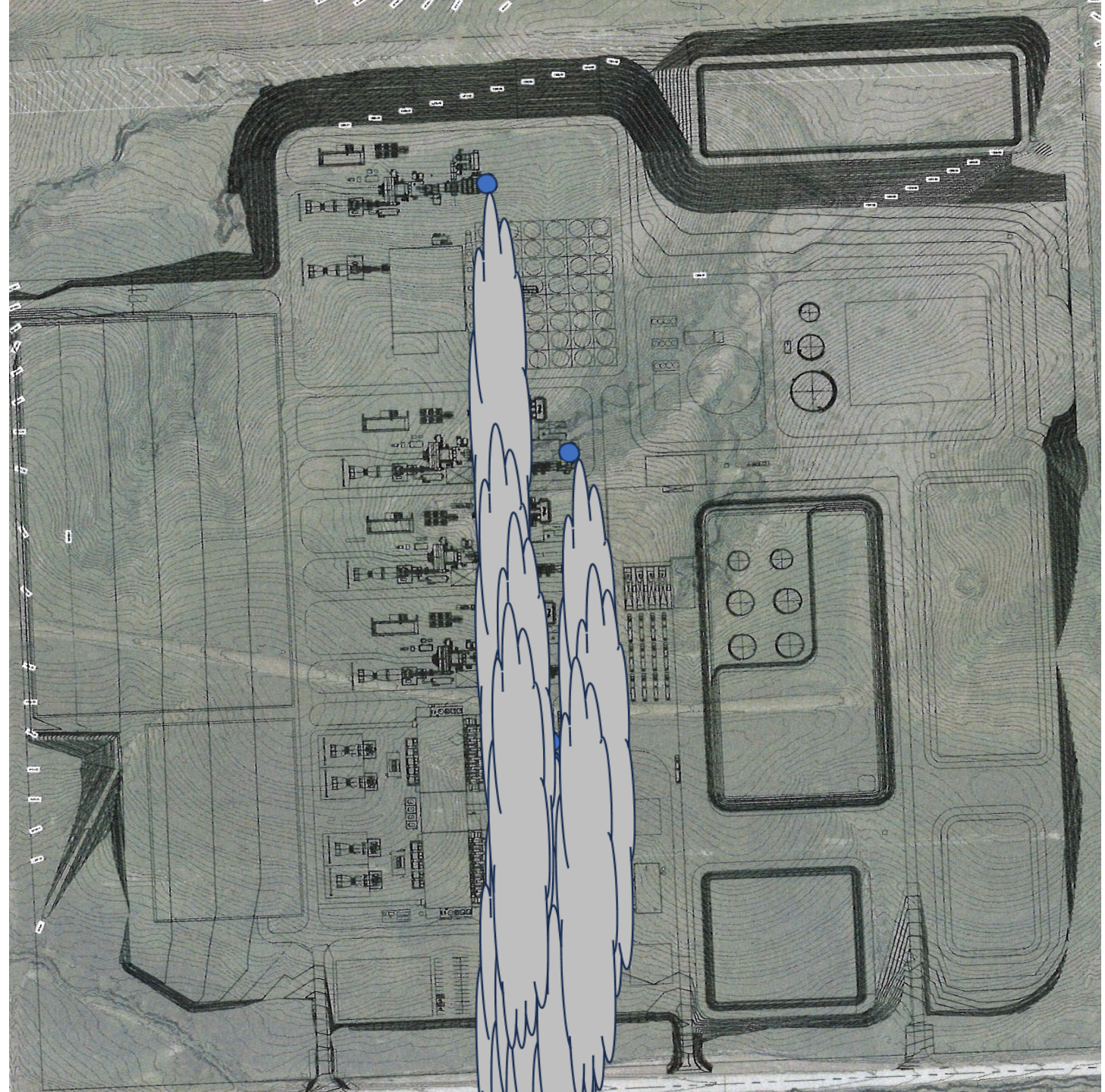

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Questions

Stay connected with us.

Nebraska Public Power District

Always there when you need us