

**Ohio EPA
NEXUS Gas Transmission**

Proposed Air Permitting Strategy

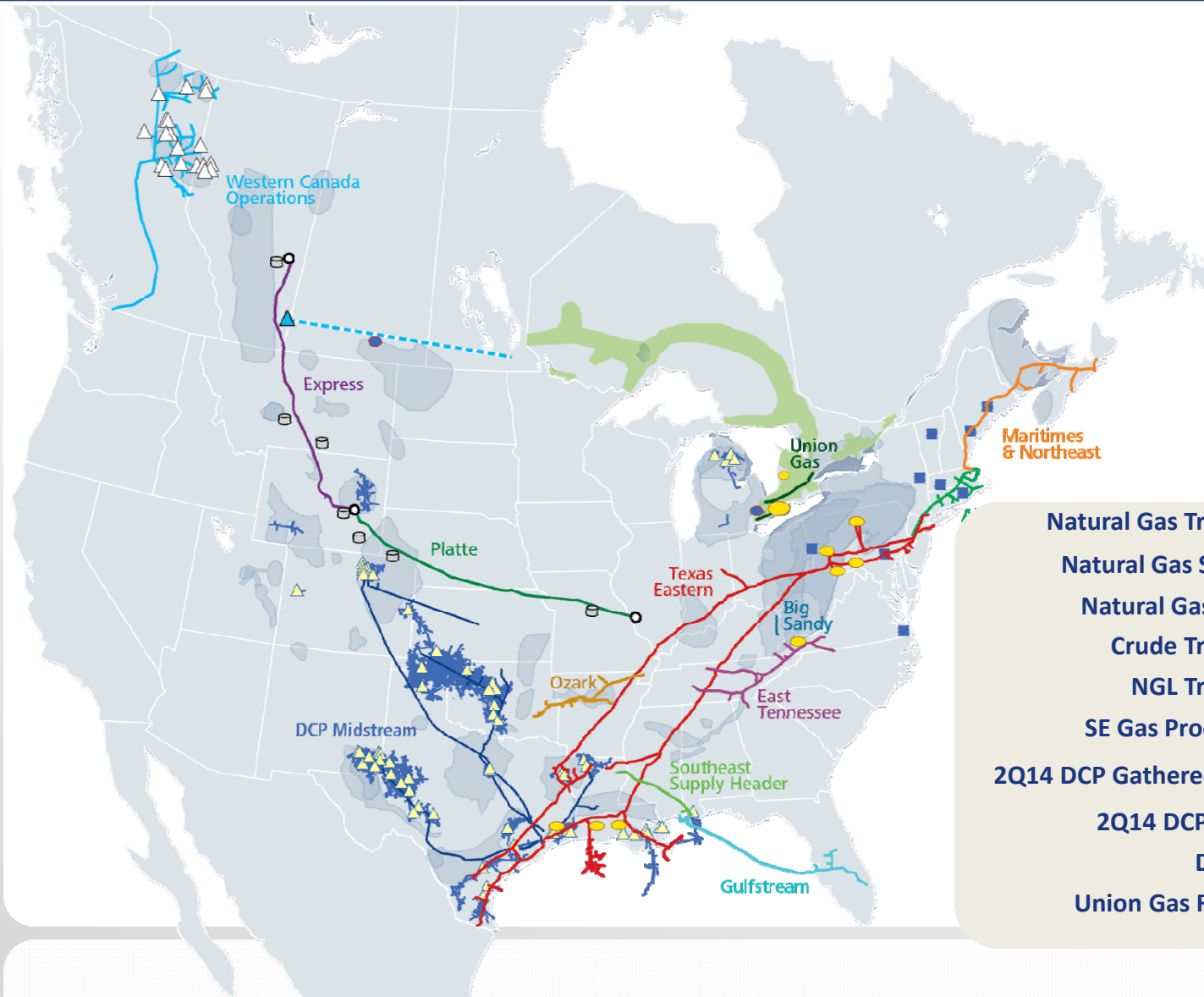
April - 2015

Overview



- Who are Spectra Energy and NEXUS Gas Transmission?
- Objectives of the NEXUS Gas Transmission Project
- Project Schedule
- Maps and Locations
- Site-by-site Project Scope
- Proposed Emission Calculation Techniques
- Opportunities for Permitting Coordination
- Questions and Discussion

Our Portfolio of Assets



- Gas storage facility
- ▲ Gas processing plant
- Propane terminal
- NGL storage
- Shale gas formations
- Crude storage
- Major oil pipeline terminal

Natural Gas Transmission Pipe: 19,000 mi
Natural Gas Storage Capacity: ~300 Bcf
Natural Gas Gathering Pipe: 70,000 mi
Crude Transmission Pipe: 1,700 mi
NGL Transmission Pipe: 1,500 mi
SE Gas Processing Capacity: 3.8 Bcf/d
2Q14 DCP Gathered and Processed: 6.7 Tbtu/d
2Q14 DCP NGLs Produced: 450 MBbl/d
Distribution Pipe: 39,500 mi
Union Gas Retail Customers: 1.4 million

Spectra Energy's Ohio Presence



- Spectra Energy's Texas Eastern pipeline has been operating in Ohio since 1947
 - 1,023 miles of pipeline in 22 counties
 - 8 compressor stations
 - 150 Bcf of gas delivered annually to Ohio
- Texas Eastern's Ohio customers include Duke Energy, American Electric Power, Dayton Power & Light, Columbia Gas of Ohio and East Ohio Gas Company
- Texas Eastern currently serves 7 power plants and 5 LDCs in Ohio
 - Providing gas to over 5,200 MW of power generation
 - Equivalent to over 15% of OH's total generation



• **Application currently with FERC to construct a 76 mile 30-inch pipeline in eastern Ohio. Received FERC NOI on April 8, 2015**

Objectives of the NEXUS Project

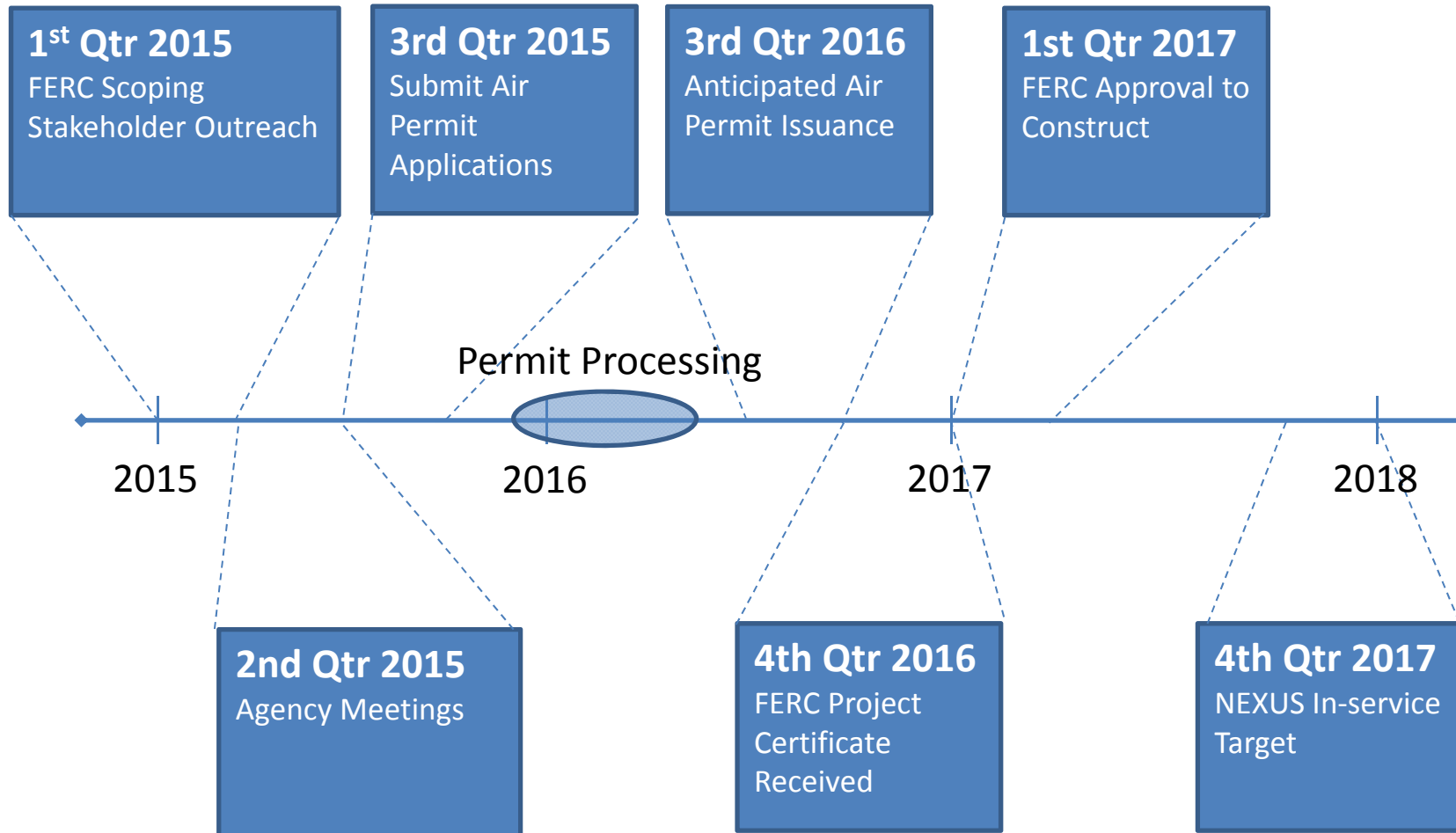


- Deliver up to 1.5 billion cubic feet of natural gas per day to customers in the following markets
 - Ohio
 - Michigan
 - Chicago, IL
 - Ontario
- Construct a 250-mile greenfield natural gas pipeline including the following types of facilities
 - Compressor Stations
 - **Columbiana County – True minor under PSD**
 - **Medina County – True minor under PSD/NANSR**
 - **Sandusky County – True minor under PSD**
 - **Lucas County – True minor under PSD**
 - Metering and Regulating (M&R) Stations
 - Potential PBR authorizations for standby generators
 - Certain emission units may qualify for permitting exemptions

Overall Pipeline Path



Project Schedule



Air Permit Processing Schedule



- NEXUS air permit application submittal date July 2015
- Preliminary completeness determination August 2015
- Agency application review and correspondence August-Feb. 2016
- Agency delivers draft terms and conditions template March 2016
- NEXUS completes review of draft terms and conditions April 2016
- Direct-final permit issuance date for all sites, or
 - Potential draft issuance for public comment July 2016
 - Potential public hearing July – Aug. 2016
- FERC Certificate Issued Sep.-Oct. 2016
- Target In-service date November 2016
- Target In-service date November 2017

Hanoverton Compressor Station *(cont.)*



- Site will be true minor with respect to PSD and Title V (criteria poll. < 100 tpy)
- Site will not be a major source of hazardous air pollutants (HAP < 10, 25 tpy)
- Site will trigger state-level dispersion modeling requirements
 - Potential emissions of NO_x > 40 tpy
 - Potential emissions of PM_{2.5} > 10 tpy
- Application and permitting schedule
 - Anticipated submittal in July 2015
 - No public comment period required
 - No public hearing required
- Equipment inventory
 - Two (2) Solar Titan 250 turbines (26,000 bhp per turbine)
 - One (1) natural gas-fired emergency engine
 - Two (2) natural gas-fired line heaters
 - Separator vessel vents and storage vessels
 - Truck loading
 - Equipment leaks
 - Gas releases
 - Parts washer

Wadsworth Compressor Station - Medina



Wadsworth Compressor Station *(cont.)*



- Site will be true minor with respect to PSD, NANSR, and Title V (criteria poll. < 100 tpy)
- Site will not be a major source of hazardous air pollutants (HAP < 10, 25 tpy)
- Site will not trigger state-level dispersion modeling requirements
- Application and permitting schedule
 - Anticipated submittal in July 2015
 - No public comment period required
 - No public hearing required
- Equipment inventory
 - One (1) Solar Titan 250 turbine (26,000 bhp)
 - One (1) natural gas-fired emergency engine
 - One (1) natural gas-fired line heater
 - Separator vessel vents and storage vessels
 - Truck loading
 - Equipment leaks
 - Gas releases
 - Parts washer

Clyde Compressor Station - Sandusky



Clyde Compressor Station *(cont.)*



- Site will be true minor with respect to PSD, Title V (criteria poll. < 100 tpy)
- Site will not be a major source of hazardous air pollutants (HAP < 10, 25 tpy)
- Site will not trigger state-level dispersion modeling requirements
- Application and permitting schedule
 - Anticipated submittal in July 2015
 - No public comment period required
 - No public hearing required
- Equipment inventory
 - One (1) Solar Titan 250 turbine (26,000 bhp)
 - One (1) natural gas-fired emergency engine
 - One (1) natural gas-fired line heater
 - Separator vessel vents and storage vessels
 - Truck loading
 - Equipment leaks
 - Gas releases
 - Parts washer

Waterville Compressor Station - Lucas



Waterville Compressor Station *(cont.)*



- Site will be true minor with respect to PSD, Title V (criteria poll. < 100 tpy)
- Site will not be a major source of hazardous air pollutants (HAP < 10, 25 tpy)
- Site will not trigger state-level dispersion modeling requirements
- Application and permitting schedule
 - Anticipated submittal in July 2015
 - No public comment period required
 - No public hearing required
- Equipment inventory
 - One (1) Solar Titan 250 turbine (26,000 bhp)
 - One (1) natural gas-fired emergency engine
 - One (1) natural gas-fired line heater
 - Separator vessel vents and storage vessels
 - Truck loading
 - Equipment leaks
 - Gas releases
 - Parts washer

Metering and Regulating Stations



- Four M&R stations anticipated along pipeline route
- Sites will be true minor with respect to PSD, Title V (criteria poll. < 100 tpy)
- Sites will not be major sources of hazardous air pollutants (HAP < 10, 25 tpy)
- Sites will not trigger state-level dispersion modeling requirements
- Certain emission units may qualify for permitting exemptions
- Application and permitting schedule, if necessary
 - Anticipated submittal in July 2015
 - No public comment period required
 - No public hearing required
- Example equipment inventory
 - Condensate storage vessels
 - Truck loading
 - Equipment leaks
 - Gas releases
 - Standby generator

Proposed Emission Calculation Techniques



- Turbines
 - Emissions based on manufacturer’s exhaust guarantees
 - Annual emissions include operation during low-temp, startup, shutdown
 - Calculations account for CO, VOC, and HAP control achieved in oxidation catalyst
- Storage Vessels
 - Working/breathing – TANKS 4.09d using Gasoline RVP 13
 - Flashing – scf/bbl factor based on sampling data
 - Hourly throughput assumes 1 complete turnover; annual throughput based on conservative estimate
- Liquid Loading
 - AP-42, Section 5.2
 - Short- and long-term throughput from storage vessel calculation
- Equipment Leaks
 - U.S. EPA Protocol for Equipment Leak Emissions Estimates, Table 2-4
 - Gas sampling data from regional metering station or GC

Proposed Emission Calculation Techniques

(cont.)



- Gas Releases
 - Mass balance for evacuated components
 - Maximum hourly emission rate assumes simultaneous evacuation of separate components; annual rate based on conservative estimate
- Emergency Generator
 - AP-42, Section 3.2 and 40 CFR 60, Subpart JJJJ
 - Annual emission rate assumes 500 hours of operation per year
- Heater
 - AP-42, Section 1.4 and vendor data
 - Annual emission rate assumes continuous operation
- Parts Washer
 - Material properties obtained from representative MSDS
 - Annual emissions based on conservative estimates of solvent make-up

Preliminary Emissions Estimates



Emission Unit	NO _x (tpy)	CO (tpy)	PM (tpy)	SO ₂ (tpy)	VOC (tpy)	HAP (tpy)
Solar Titan 250 Turbine	31 (9 ppm)	8 (controlled)	6	3	3 (controlled)	0.6 (controlled)
Gas Releases	-	-	-	-	~20-25	~1-2
Equipment Leaks	-	-	-	-	~6-10	~1
Vessel w/ Flashing	-	-	-	-	~0.6	~0.04

Preliminary Emissions Estimates *(cont.)*



Compressor Station	NO _x (tpy)	CO (tpy)	PM (tpy)	SO ₂ (tpy)	VOC (tpy)	HAP (tpy)
Hanoverton	65	19	13	6	45	5
Wadsworth	33	10	6	3	32	4
Clyde	33	10	6	3	32	4
Waterville	33	10	6	3	32	4

Relevant Guidance



- Ohio EPA Engineering Guide #69
 - Modeling thresholds
 - Expected procedures for developing air dispersion models, if applicable
 - Ohio Acceptable Incremental Impacts (OAIIs)
- Ohio EPA Engineering Guide #70
 - Procedures for conducting air toxic analyses, if applicable
 - Exemptions
- Best Available Technology – February 2014
 - Procedures for establishing allowable emission limits through permitting exercises
 - Guidance for incorporating work practices, manufacturer’s specifications as limits

Opportunities for Permitting Coordination



- Development of standard permit terms
 - Compressor stations are functionally identical
 - Sites will be subject to the same state and federal requirements
- Distribution of standard permit terms
 - Managed through Ohio EPA's Central Office
 - Opportunities for regional offices and NEXUS to comment on standard terms

Questions and Discussion



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