

FERC Regulation of Natural Gas Storage

Presented by - Kurt L. Krieger

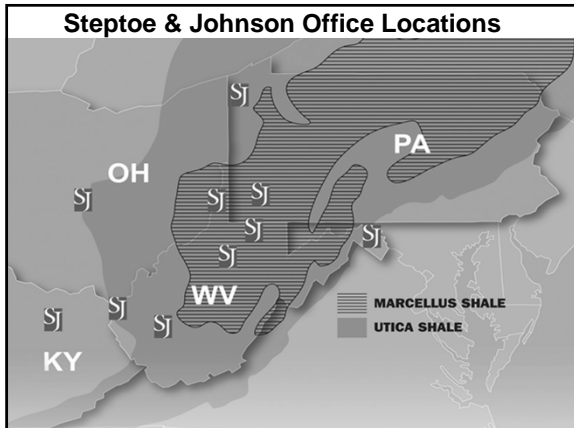
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Today's Presenter



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Today's Topics

- I. Introduction to FERC Regulation
- II. FERC Regulation of Natural Gas Storage
 - Part A: FERC Storage Concepts Overview
 - Part B: FERC Storage – What's the Plan?
 - Part C: FERC Application and Approval Process
 - Part D: Post-FERC-Approval Issues

**I.
Introduction to
FERC Regulation**

What is FERC?

Federal Regulatory Agency

- Washington, DC
- five regional offices for hydroelectric dam safety
- 10 internal functional offices

Five-member Commission

- staggered five-year terms
- no more than three from same political party
- Presidential appointment/Senate confirmation

2009 operating cost: \$288.5 million

More than 1,350 employees



Source: FERC FY 2009 Performance and Accountability Report, Nov 2009 (numbers are approximate)

FERC Enforcement Power

ENRON

\$1,000,000 (per day/per violation)

What does FERC do?

Regulates:

1. Interstate natural gas pipelines
2. Electric utilities
3. Hydropower projects
4. Oil pipelines

What does FERC do?

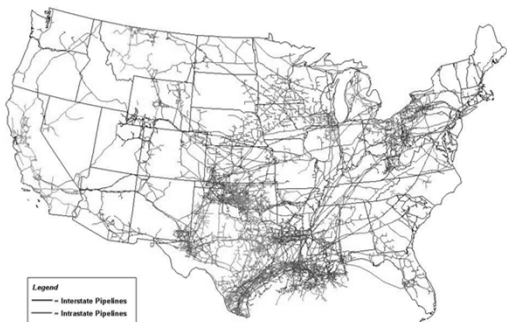
Also:

- Monitors energy markets (manipulation)
- Safety (hydro facilities and LNG)
- Electric reliability standards (NERC)
- Enforcement (civil penalty authority: \$1 million per day/per violation; criminal: \$1 million and 5 years imprisonment for knowing and willful violations of the law)

What does FERC do? - Gas

- Transmission/sale of natural gas for resale in interstate commerce
- Regulates rates, terms and conditions of services under tariffs on file at FERC
- Siting and abandonment of interstate gas pipelines and storage facilities
- Pipeline posting, affiliate and reporting rules
- LDC and intrastate pipelines' interstate transactions

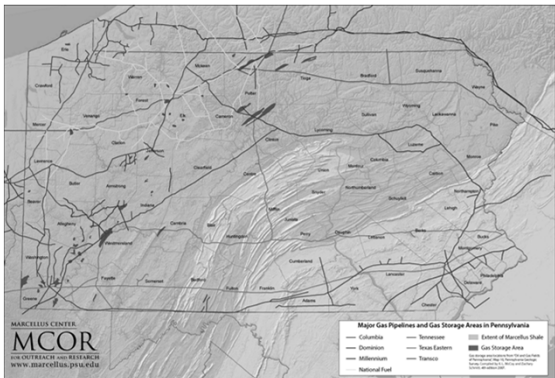
What does FERC do? - Gas



Legend
— Interstate Pipelines
- - - Intrastate Pipelines

Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

What does FERC do? - Gas



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www.marcellus.psu.edu

Major Gas Pipelines and Gas Storage Areas in Pennsylvania
Columbia — Tennessee
Dominion — Texas Eastern
Midcontinent — Transco
National Fuel
Gas Storage Area
Salt Caverns of Marcellus Shale

What does FERC do? - Gathering

- Under NGA § 1(b), no FERC jurisdiction over production or gathering of gas, BUT:
- Gathering **provided by an interstate pipeline:**
 - FERC regulates the rates and terms of service (*but not the facilities*) for gathering services provided by an interstate pipeline under NGA § 4 “in connection with” jurisdiction
- Columbia Gas Transmission vs. Nicole Gas Production, Ltd.
 - Just because the pipeline had a tariff provision about who was obligated to install and pay for meters, it did not confer FERC jurisdiction over Columbia’s gathering facilities/meters.

What does FERC do? - Gathering

- Gathering **provided by affiliate of an interstate pipeline:**
 - Required Pipeline Tariff Provision:
 - Pipeline will act in a non-discriminatory manner toward all supply
 - Not tie receipt of pipeline services to service on the gathering affiliate
 - Not grant any undue preference to shippers on the gathering affiliate
 - FERC will assert jurisdiction over affiliated gatherer under limited circumstances

What does FERC do? - Gathering

- NGA does not define “gathering” **facilities**
- FERC uses a modified “primary function test”
 - A six-part test
- Also: purpose, location, operation of facilities and business activities of owner
- No single factor determinative

What does FERC do? - Electric

- Transmission and wholesale sales of electricity in interstate commerce
- Reliability of the interstate transmission system through mandatory reliability standards (NERC)
 - Penalties for violation of NERC standards
- Disposition of certain generation facilities
- Terms of electric interconnections
- Mergers/acquisitions/reorganizations/securities
- Affiliate Standards and Codes of Conduct
- Siting of electric transmission (limited circumstances)

What does FERC do? - Hydro

- Issues licenses for the construction of a new hydropower project
- Issues licenses for the continuance of an existing project (relicensing)
- Oversees of all ongoing project operations, including dam safety inspections and environmental monitoring

What does FERC do? – Oil Pipelines

- Regulates rates and practices of oil pipeline companies engaged in interstate transportation
- Establishes equal service conditions to provide shippers with equal access to pipeline transportation
- Establishes reasonable rates for transporting petroleum and petroleum products by pipeline
- Think liquid hydrocarbon, not just oil

What does FERC NOT do?

- Retail electricity and natural gas sales
- Construction of electric generation facilities or oil pipelines
- Mergers and acquisitions related to oil or interstate natural gas pipelines
- Activities of municipal power systems, rural electric cooperatives
- Pipeline safety

FERC Certification Process - Gas

- Application to build an interstate facility
 - Includes proposed pipeline route/storage boundary and environmental reports
 - Required landowner notification
 - Intervene to protect your interests
- FERC prepares EA or EIS
- FERC order approving (certificate)
 - Approves route and environmental conditions

FERC Certification Process - Gas

- Natural Gas Act § 7(h) eminent domain
 - FERC prefers ROW and storage lease acquisition by agreement with the landowner, not litigation
 - Judge cannot second guess FERC's route or location decision
 - Only issue: how much pipeline must pay the landowner

INGAA Commitment to Landowners

Engage landowners in a respectful, informative and clear manner embracing the following core principles:

- 1. Respect and Trust**
- 2. Accurate and Timely Information**
- 3. Negotiate in Good Faith**
- 4. Respect the Regulatory Compact**

Communicate clearly that federal eminent domain cannot be exercised unless a FERC decision/certificate is granted by the FERC and will distinguish clearly when, and if, eminent domain is exercised pursuant to state law.

INGAA Commitment to Landowners

- 5. Responding to Issues**

Respond to Landowner concerns in a timely fashion. . . . provide landowners with a single point of contact within the company to answer any question or concern and to provide general or project-specific information.

- 6. Outreach**

Engage with and promote awareness on the part of affected stakeholders early in the planning process.

- 7. Industry Ambassadors**

- 8. Ongoing Commitment to Training**

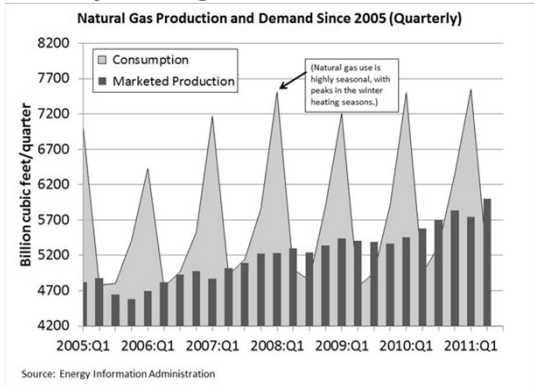
**II.
FERC Regulation of
Natural Gas Storage**

Part A:
FERC Storage Concepts
Overview

Natural Gas Storage Background

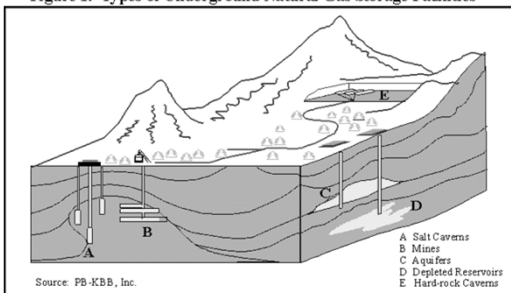
- Storage in underground formations
- First successful - 1915 in Welland County, Ontario; 1916 in Buffalo, New York (Zoar field)
- Storage = warehouse = supply
- Inject in summer (April - October); withdraw in winter (November - March)
- Balance demand (hourly, daily) with a supply
- Serve a market with high peak demands in warm (power gen) or cold weather (heating)
- Supports price arbitrage activity

Why Storage?



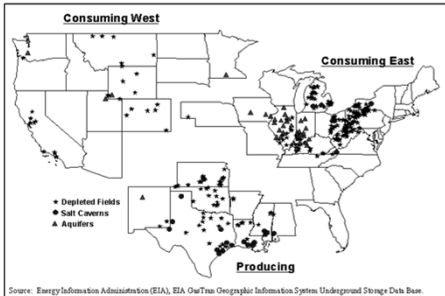
Types of Underground Facilities

Figure 1. Types of Underground Natural Gas Storage Facilities



Storage in the Lower 48

Figure 2. Underground Natural Gas Storage Facilities in the Lower 48 States

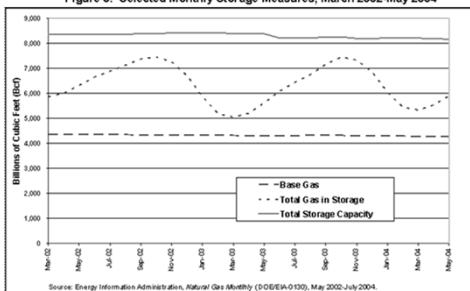


Storage Terms and Measures

- Total gas storage capacity (Bcf)
- Total gas in storage
 - Base or Cushion gas (permanent)
 - Working gas inventory (in/out)
- Deliverability (daily withdrawal rate)
 - MMcf/day (volume) or Dth/day (heat content)
 - 1 therm = 100,000 Btu = 100 cubic feet
 - 1 Dth = 1,000 cubic feet (1 Mcf)
- Injection capacity or rate

Storage Terms and Measures

Figure 3. Selected Monthly Storage Measures, March 2002-May 2004



Storage Type Characteristics

| Storage Type: | Cushion to Working Gas Ratio: | Injection Period (Days): | Withdrawal Period (Days): |
|-----------------------------|-------------------------------|--------------------------|---------------------------|
| AQUIFER | Cushion 50% to 80% | 200 to 250 | 100 to 150 |
| DEPLETED OIL/GAS RESERVOIRS | Cushion 50% | 200 to 250 | 100 to 150 |
| SALT CAVERN | Cushion 20% to 30% | 20 to 40 | 10 to 20 |

Source: FERC Staff's September 30, 2004 Storage Report, p. 7.

FERC's Unbundling Concepts

- FERC Order Nos. 436 and 636 (1993)
- Bundling of transportation service with gas sales service declared unjust and unreasonable (illegal)
- FERC-regulated interstate natural gas pipeline and storage facilities required to provide "unbundled" services
 - Transportation service (to/from storage) separate from storage service
 - Must offer firm and interruptible services
 - Shipper must have title to the gas it transports or stores
- FERC-regulated pipelines sell transportation or storage "capacity," but, generally, do not sell the "gas commodity"
- Underground natural gas storage service is not a gas sales service

Intrastate vs. Interstate Storage

- Step One
- Will my storage field be FERC regulated?
- Is it interstate?
- FERC approval required to construct an interstate storage field
- FERC approval required for interstate service and intrastate conversions
- State/Commonwealth approval for intrastate fields
- PA – 41 FERC-jurisdictional storage fields

Storage Type Development Costs

| | Gulf Coast Salt Cavern: | Northeast Reservoir Storage: |
|--------------------------------------|-------------------------|------------------------------|
| CAPACITY (BCF) | 5 | 9.4 |
| DELIVERABILITY (MMcfd) | 500 (est.) | 147 |
| BASE GAS COST (\$ Millions) | 12 | 3.2 |
| TOTAL DEVELOPMENT COST (\$ Millions) | 65 | 39.5 |

Source: FERC Staff's September 30, 2004 Storage Report, p. 19.

Intrastate to Interstate Service

- Recent intrastate conversions
- Providing interstate service
- State/Commonwealth and federal issues
 - PUC and FERC filings required
- Ohio and Pennsylvania filings before state commissions and FERC

Intrastate to Interstate Service

- Peoples Natural Gas Company LLC and Rager Mountain Storage Company LLC
- Peoples lease of storage capacity to Rager
 - 2 Bcf/45,000 Dth/d deliverability to Rager in Peoples' Rager Mountain storage field
- Peoples filings
 - PaPUC Filing (settled)
 - FERC filing for limited jurisdiction certificate (for facility serving interstate market)
- Rager filings
 - FERC filing to provide interstate storage services at MBR

***Part B:
FERC Storage –
What's the Plan***

Early Project Development – High-Level

- Field feasibility and testing
- Identify base project (facility/property requirements)
- Open season (services offered/market demand)
- Cost-based or Market-based rates
- Precedent agreements
- Acquisition of property rights and leasing
- Begin stakeholder outreach
- FERC pre-filing and application processes

Field Feasibility and Testing

- FERC construction authorization rules are complex
- Blanket certificate holders
 - Injection, withdrawal, observation wells for testing or development of underground storage pre-approved, subject to conditions
- Must obtain FERC certificate to use storage reservoir
- Drilling new injection/withdrawal wells in existing storage requires authorization
- Existing well stimulation to retain original field deliverability is pre-approved
- Exemptions for some temporary acts or operations
- Generally -- depends on type of activity or facility and cost

Market Demand

- Open season
- Publicized invitation for customers
- What services offered?
- At what rates?
- Customer commitment
- Precedent agreements

Types of Storage Services

- Firm and interruptible
- Peaking and off-peak
- Notice or no-notice
- Parking and lending
- Terms contained in Rate Schedules
- Price or rate components
- Retainage

Storage Pricing - General

- Cost-based or Market-based
- What will customers pay?
- What will regulator allow?
- Does market-based mean more money?
- More front-end work for market-based
- Incrementally priced (no subsidy rule in 1999 Certificate Policy Statement)

Storage Pricing - Demand & Usage

- Firm services pay demand/reservation (rent) charges plus usage/commodity charges
- Interruptible services pay usage/commodity charges
- Demand/Reservation = fixed costs
- Usage/Commodity = variable costs
- Retainage = fuel reimbursement rate
 - Compensates for fuel used to inject and withdrawal gas and for certain lost gas

Storage Pricing - Fixed & Variable

- Four-part storage rate design:
 - Capacity (fixed)
 - Deliverability (fixed)
 - Injection (variable)
 - Withdrawal (variable)
- Fixed costs collected through capacity and deliverability demand charges
- Variable costs collected through injection and withdrawal usage charges

Storage Pricing - Components

- Demand/Reservation charges (fixed costs)
 - Storage Inventory Charge (capacity under contract)
 - Storage Deliverability Charge (deliverability per contract)
- Usage/Commodity charges (variable costs)
 - Injection Charge (based on use)
 - Withdrawal Charge (based on use)
 - Excess Injection/Withdrawal Charges
- Interruptible services may pay some fixed costs

Storage Pricing - Market-Based

- EPC Act 2005 Section 312
 - New NGA Section 4(f)
- FERC Order Nos. 678 (2006)
- Criteria for obtaining MBR for new storage
- Two Options:
 - Demonstrate a lack of market power
 - Market power exists, but negotiate MBR and demonstrate customer protections

Storage Pricing - Market-Based

- Option #1 – Demonstrate Lack of Market Power
- 1996 Alternative Ratemaking Policy Statement
- Relevant Geographic Market (e.g., PA and NY)
- Product Market (includes non-storage alternatives)
- Applicant's Facilities and Proposed Services (Products)
- Other Factors (e.g., barriers to entry)
- Market Power Analysis (Expert witness)
 - Compute projects market concentration
 - "HHI" Herfindahl-Hirschmann Index
 - 1,800 or less – sufficient alternative suppliers; cannot exercise market power

Storage Pricing - Market-Based

- Option #2 – Applicant Presume to Have Market Power
- MBR must be in the public interest
 - (e.g., MBR required to finance project)
- MBR necessary to encourage construction of facilities
- Area needs new or additional storage services
- Customers adequately protected
 - (e.g., from economic withholding of capacity now and in the future; possible use of a reserve price)
- Reasonable tariff terms and conditions

Precedent Agreements

- Customer’s contractual commitment for firm storage service with conditional rights to terminate
- Rate, term, quantity commitment
- In-service date commitments
- Acceptable FERC approvals
- Board or credit approvals
- Force majeure clause

Property Rights and Leasing

- Extremely important
- What is the pipeline route? Where will the storage field be located?
- ROW, surface and sub-surface rights
- Identify landowners and negotiate easements
- The subject of a separate seminar
- Natural Gas Act eminent domain power

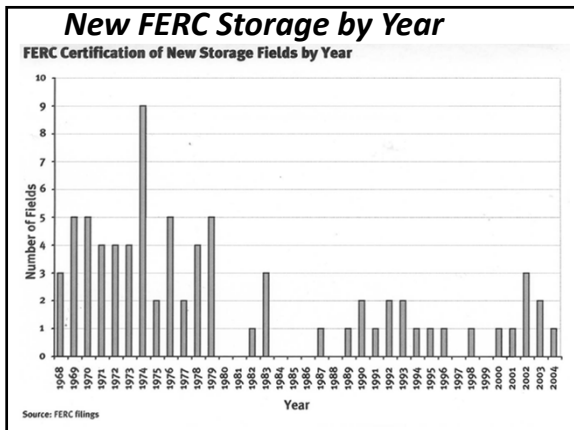
Eminent Domain

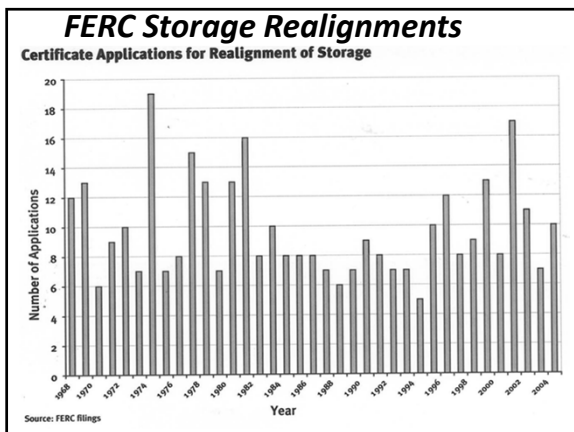
- NGA Section 717f(h) Right of Eminent Domain
"When any holder of a certificate of public convenience and necessity cannot acquire by contract, or is unable to agree with the owner of property to the compensation to be paid for, the necessary right-of-way to construct, operate, and maintain a pipe line or pipe lines for the transportation of natural gas, and the necessary land or other property, in addition to right-of-way, . . . necessary to the proper operation of such pipe line . . . it may acquire the same by the exercise of the right of eminent domain in the district court of the United States for the district in which such property may be located, or in the State courts. . . ."
- Federal precedent for right to condemn property rights necessary for FERC certificated storage
- FRCP 71A governs

Stakeholder Outreach

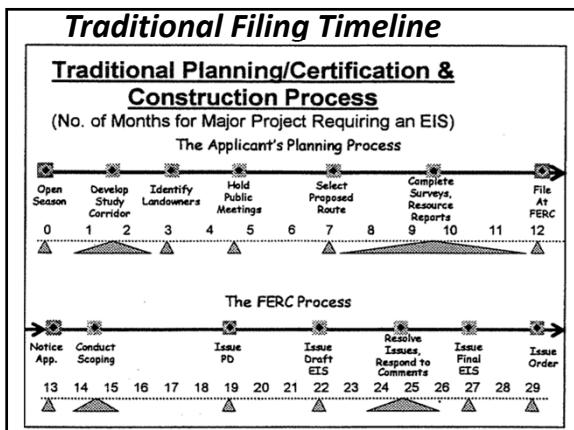
- FERC expects it and it's good business
- Team of many disciplines with regular meetings
- Public Affairs lead and single point of contact
- Written Communication Plan
- Provide regular, consistent, accurate story and information
- Prepare list of affected landowners
- Communicate with landowners, elected officials, agencies, communities
- 800#, website, open houses, FAQs, facility tours
- Train land agents

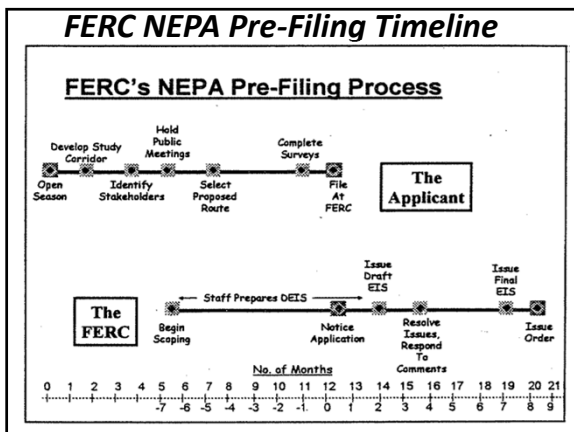
***Part C:
FERC Application and
Approval Process***





- ### Big Picture Timeline
- Project development (prior slides)
 - Stakeholder outreach
 - FERC Pre-filing process
 - FERC Application for a Certificate
 - Discovery
 - EIS/EA
 - Preliminary FERC order
 - FERC Certificate Order





FERC NEPA Pre-filing Process

- What is it?
- Interagency agreement among FERC and other agencies (2002)
- Process for early interaction with FERC and other agencies to resolve issues at earliest stages of project development
- Voluntary
- Must request to use it
- Subject to FERC approval
- FERC is proponent of pre-filing process

FERC NEPA Pre-filing Process

- Key difference between pre-filing and traditional
- Traditional filing approach:
 - Environmental analysis does not begin until after the application is filed with FERC
 - Project developer initiates contact with agencies pre-filing, FERC does not
 - More post-filing discovery to answer
 - Traditional can take longer as review may be more sequential than concurrent

FERC NEPA Pre-filing Process

- Meet with FERC and review project
- Written letter to FERC at least 6-8 months before application filing
- If approved, FERC initiates a Docket PF to create a transparent record
- FERC notifies participating agencies and conducts interagency coordination meetings
- FERC assigns FERC project manager
- Resource Reports 1-12 must be submitted to FERC in draft during pre-filing process and then in final before FERC application filed

FERC NEPA Pre-filing Process

- Contents of pre-filing written request to FERC:
 - Project description, maps, drawings
 - Explain why pre-filing process, including timing considerations
 - Identify contact with agencies, permitting requirements
 - List agencies and other officials contacted to date
 - List all work done to date
 - List landowner contacts
 - Project facility/route planning
 - Plans for stakeholder and public outreach and single point of contact
 - RFP for third-party contractor to prepare EIS
 - Acknowledge that a complete environmental report and application required at time of filing

FERC Certificate Policy Statement

- 1999 Certificate Policy Statement
- Guidance for evaluating major new construction
- Is there a need?
- Is it in the public interest?
- Desire to approve construction to enhance competitive alternatives
- Avoid overbuilding, unnecessary disruptions to the environment or use of eminent domain

FERC Certificate Policy Statement

- 1999 Certificate Policy Statement
 1. Threshold requirement: no subsidy test, no subsidization from existing customers
 2. Eliminate or minimize adverse/unfair effects on:
 - a. existing customers
 - b. competing companies and their captive customers
 - c. landowners and communities affected
 3. Then weigh: public benefits vs. potential adverse consequences

The Certificate Application

- Major components:
- Narrative
- Exhibits
- Rate Exhibits
- MBR testimony and study support
- Resource Reports
- Pro forma Tariff

The Certificate Application

- The Application Narrative
 1. Executive Summary of the Project
 2. Description of the Applicant
 3. Existing facilities and operations
 4. Any related applications
 5. Detailed description of required facilities
 - a. Field description/boundary/formations
 - b. Compression/pipelines/interconnections/meters
 - c. Materials staging areas
 - d. Non-jurisdictional facilities

The Certificate Application

- The Application Narrative (cont.)
 6. Requested authorizations to construct
 7. Environmental impacts analysis (Resource Reports)
 8. Engineering and Construction
 9. Markets and Proposed Services
 10. 1999 Certificate Policy Statement
 - a. No subsidy test
 - b. No adverse/unfair effects on existing customers or competing companies and their customers
 - c. No material effects on the environment or the communities
 - d. No significant adverse effects on landowners

The Certificate Application

- The Application Narrative (cont.)
 11. Proposed Services and Tariff descriptions
 12. Request for MBR (or cost basis for rates)
 13. Requests for Waivers
 14. Manner for compliance with landowner notification
 15. Requests for various authorizations (including blanket service and construction authorizations going forward)
 16. Other
 - a. Confidential treatment for certain items
 - b. "CEII" Critical Energy Infrastructure Information (think 9/11)

The Certificate Application

- Exhibits A to Z
 - Articles of Incorporation
 - General corporate information
 - Environmental reports and data
 - Engineering and gas flow diagrams
 - Certain financial information
 - MBR expert testimony and supporting exhibits
 - Tariff

Environmental Resource Reports

- FERC required by National Environmental Policy Act (NEPA) to prepare an Environmental Impact Statement (EIS) on any major federal action (or an Environmental Assessment (EA))
- Includes construction of pipeline or storage facilities
- FERC can place environmental conditions in its certificate
- FERC not required to certify the environmentally preferred alternative

Environmental Resource Reports

- 13 Resource Reports:
 1. General project description
 - facilities, construction timetables, maps, landowners
 2. Water use and quality*
 - water bodies, wetlands, water disposal
 3. Fish, wildlife and vegetation
 - endangered species, habitats
 4. Cultural resources
 5. Socioeconomics
 - areas affected, manpower, payroll

Environmental Resource Reports

- 6. Geologic resources*
- seismic activity, mining
- 7. Soils
- 8. Land use, recreation and aesthetics
- comprehensive, eminent domain activity
- 9. Air and noise quality
- 10. Alternatives
- 11. Reliability and safety
- 12. PCB Contamination
- 13. Engineering and design material

Tariff Contents

- Table of Contents
- Map
- Rates for services
- Rate Schedules
 - Each a description of a service
- General Terms and Conditions
- Pro forma Agreements and Forms

Tariff Rate Schedule Contents

- Title – the name of the service
- Availability
- Kind and character of service
- Summary of applicable rates charged
- Other provisions unique to the service
- List applicable General Terms and Conditions

Landowner Notification

- Required by FERC regulations
- All owners of surface and subsurface property within field boundaries and buffer zone
- Same for expansions of existing fields
- Owners of property otherwise affected by construction
- Owners of certain abutting property

Landowner Notification Letter

- Docket number
- Certificate process pamphlet
- Company, project information and maps
- Company and FERC contact information
- Landowner rights and eminent domain
- Locations where application is available
- Notice of Application

Traditional FERC Process Recap

- Public Notice of Application
- Scoping to determine environmental issues
- Send discovery/data requests to applicant
- **FERC Order -- Preliminary Determination (19)**
- Next: EIS vs. EA
- Draft EIS or EA sent to cooperating agencies for review
- Issues draft EIS or EA for public review and comment
 - EIS public meetings
- Responds/revises draft EIS or EA
- Issues final EIS or EA
- **FERC Order – Approving (certificate) or denying project (29)**
- Accept certificate, obtain any remaining permits
- Request Notice to Proceed with Construction

FERC Certificate Order Contents

- Approves, or approves and modifies proposal
- Must commence construction within one year
- Cannot build until service agreements executed
- Environmental and other conditions
- Additional compliance reporting
- Construction process subject to ongoing reporting, request for variances and permission

***Part D:
Post-FERC-Approval Issues***

What is "Certificated"?

- Physical parameters are certificated:
 - Total storage cavern space
 - Base gas vs. working inventory gas
 - Reservoir pressure
 - Reservoir and buffer boundaries
 - Deliverability?
- Obligation to maintain and operate within certificated parameters
- Remember \$1,000,000 (per day/per violation)

Cradle to Grave Regulation

- Ongoing compliance reporting
 - Items required by the certificate
 - FERC regulations
 - E.g., annual storage report
 - EIA reports
- Abandonment of facilities
- Sale, transfer, decline or deactivation of the storage facility

Protecting the Storage Field

- Encroaching production
- Gas migration cases
- Storage field boundary extension
- FERC and civil litigation interaction
- Cases compared and contrasted

Thank You

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