



Telecommunications Carrier of Last Resort: Necessity or Anachronism?

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The Communications Act of 1934 established the concept of universal service

“A nationwide, regulated telecommunications network available to . . . to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex. . . with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication. . .”

- Ensures comparable service for rural and urban areas
- Requires carriers to serve all customers (carriers/providers of last resort) on request
- Defines carriers that may receive federal (and State) funding for high cost areas, Lifeline, and other support



Carriers of last resort ensure that all customers have access to affordable service

A carrier (or provider) of last resort is a telecommunications company that commits (or is required by law) to provide service to any customer in a service area that requests it, even if serving that customer would not be economically viable at prevailing rates.

- Provide service on request throughout their local exchange
- May recoup the cost for line extensions
- Generally applies to carriers that provided service before the passage of the 1996 Telecommunications Act
- Includes wireless, cable, or IP-enabled (VoIP) as designated by state law (i.e., technology neutral)
- Service must be comparable regardless of where it is provided (urban vs. rural service)



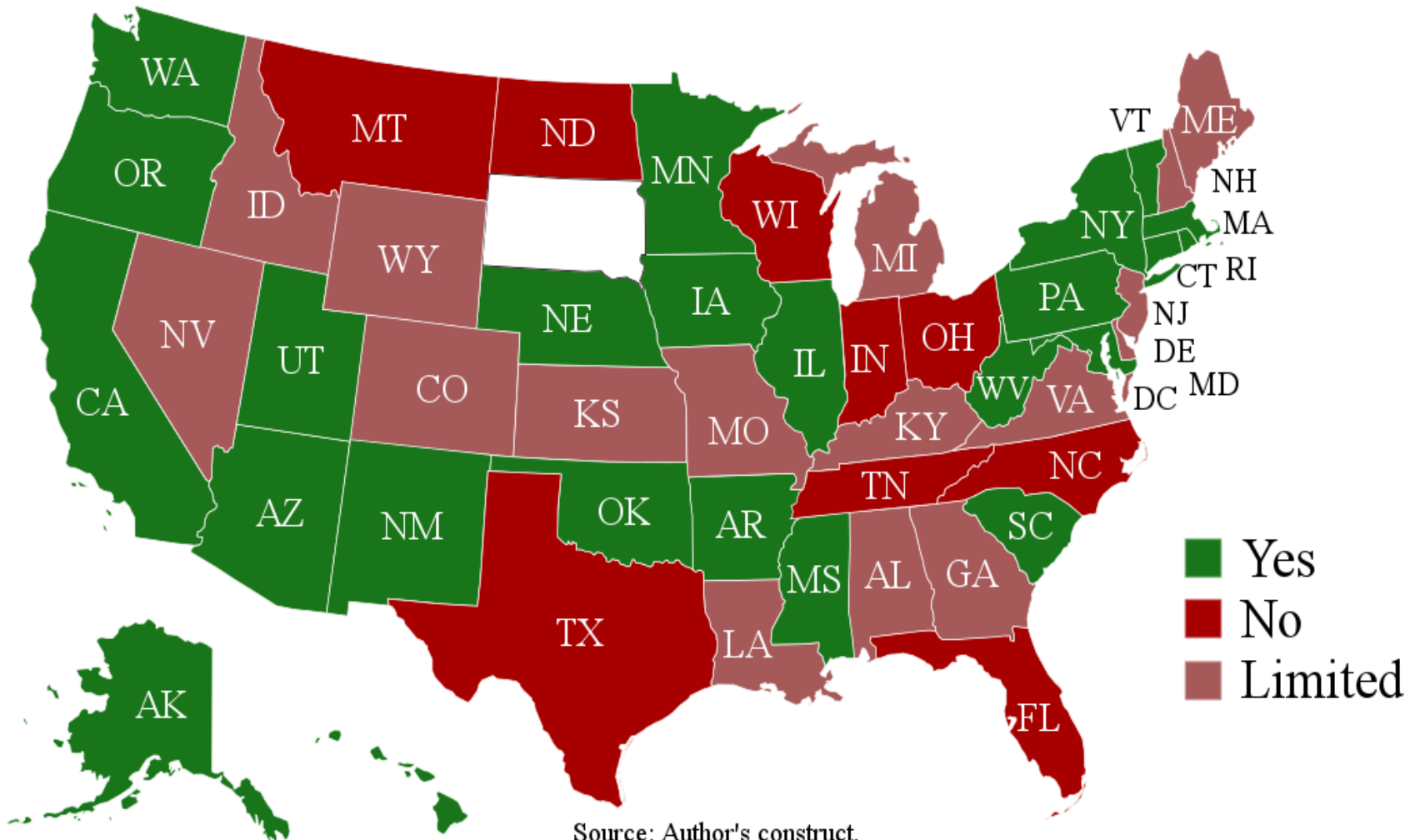
COLR service is not unique to telecommunications

- COLR service is a cornerstone of utility regulation
 - Ensures that all consumers have access to electric service
 - State PUCs designate electric utilities to provide “last resort” service to consumers who cannot buy elsewhere
- COLRs create a safety net for customers when their chosen provider leaves a competitive market or is unable to continue service
- Regulated COLR rates are set through rate cases and may differ rates depending on location and requirements
- Telecommunications rates are market based
 - Federally established rate floor
 - State specific requirements for “basic local service”

Is COLR a statutory requirement for telco or an implied part of the network compact?

- COLR requirements are implicit or explicit depending on state statutes
 - Carriers must provide service to all customers in their territory
 - Carriers may not withdraw intrastate service without State commission approval
 - Carriers must provide basic service at a price fixed by the State commission
 - Service must meet quality and availability standards (ETC requirements)
- By 2014, 25 states had eliminated or revised COLR requirements
 - Presence of effective competition
 - ILEC line loss (Louisiana)
 - Elimination of regulation generally
- 24 states continue to require ILECs to provide COLR service (updates in progress)

COLR Requirements are both explicit and implicit



Source: Author's construct.

COLR Requirements Differ by State

- Provide service to all customers throughout the service territory
 - Basic local dial tone service
 - Offer basic service using any technology
 - Meet quality of service requirements for specific groups
 - Serve as an eligible telecommunications carrier (ETC)
- USF funding for providers in rural areas without unsubsidized competitors
- Service generally not required where communities have contracted with a non-ILEC competitor
- Key questions going forward
 - Should/can COLR requirements continue?
 - Should broadband COLR be a new requirement?

NRRI 2016 COLR study and report

- Goal:

- Determine the status of COLR in the 21st century
- Assess the need for continuing COLR requirements
- Provide objective data for states contemplating revisions to COLR policy
- Assist State regulators in determining how to ensure the continuation of universal telecommunications service

- Process:

- 50 state COLR survey
- Identify COLR requirements by state
- Examine the context of the requirements (e.g., statutes, current legislation)
- Assess the impact of the removal of COLR requirements on universal service



NRRI study will address key questions about COLR in the 21st century

- Will/should COLR requirements survive the IP Transition?
 - Legislation limits IP oversight in many states
 - Is COLR a voice requirement or should it be extended to broadband
 - The National Broadband Plan envisions a broadband COLR, is this a viable idea
- Should COLR requirements be broadened to include all carriers?
 - ILECs line loss reducing their dominant position
 - Last mile still an issue
 - Customers switching to non-traditional carriers or cutting the cord all together
- Can competition ensure the continued availability of service to all customers regardless of location?



Fragmentation in the Water Industry and Regulatory Impacts

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Water Industry Fragmentation

- 54,000+ water systems
- Small water companies may not be as advanced, capable of addressing infrastructure, regulatory, and security issues as larger companies
- How do commissions and companies deal with these challenges?



Research Areas

- Summary of fragmentation
 - Types of water companies, private, local governments, etc.
 - Water resources map, geological maps of watersheds
- Concerns of companies based on size
- Industry support for small companies
- Commission support for small companies



Overview of Systems

System Ownership	Population Served				
	<=500	501-3,300	3,301-10,000	10,001-100,000	>100,000
Public	7,602	10,188	4,323	3,419	367
Public-Private	559	524	127	54	6
Private	19,827	2,849	504	399	58
Total	27,988	13,561	4,954	3,872	431



Struggles of Small Water Companies

- Economies of scale, financial stability, technical proficiency, reliable infrastructure
- Large majority of systems with a history of significant noncompliance with drinking water standards
- 1996 Safe Drinking Water Act intended to address the issue
- Relatively small customer base challenged to afford rates required to upgrade, replace, and maintain infrastructure



Regulatory Challenges

- Regulatory knowledge, regulatory difficulty
- Small water companies may be discouraged by a lengthy, difficult rate application process
- Traditional ratemaking is aimed at large-scale utilities, with large-scale infrastructure/resources



Regulatory Considerations

- Streamlining the rate application process
 - Simplified rate applications
 - Electronic filing procedures
 - Annual reporting included in rate application
 - Combining water and wastewater revenue requirements
- Increasing engagement with small water utilities
 - Direct commission staff involvement, including site visits
 - Multi-stakeholder engagement



Regulatory Considerations

- Automated mechanisms
 - Simplified rate of return mechanisms
 - Cost of living adjustments
- Capital and finance challenges
 - Emergency infrastructure funds
 - Use of CIAC when unsustainable rates may result
- Policy measures that may promote consolidation
 - Laws in six states – CT, IL, IN, MO, NJ, PA – that allow purchase price to be included in the rate base, provided it represents Fair Market Value



Review of Utility Billing and Customer Care: Current Issues and Future Directions

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Presentation outline

- Indiana Utility Regulatory Commission's (IURC) *Indiana Billing Symposium*
- Research methods for NRRI Research Report
- Findings
- Ideas for future research



IURC Billing Symposium

- IURC convened a day-long *Indiana Billing Symposium* in November 2015 (see NRRI Report No. 16-02)
- The purpose was to bring together utility billing stakeholders, to allow for a deeper understanding of billing practices across the utility industry, and provide for open discourse
- About 75 participants attended the *Symposium*, representing 25 organizations
- The *Symposium* consisted of four panels, each included three or more 10-minute presentations followed by a Q&A session and open discussion
- Panel subjects were:
 - (1) consumer research
 - (2) paper billing
 - (3) eBilling
 - (4) comprehensive customer engagement on billing



NRRI Report No. 16-03: Methods

- *IURC Symposium* as a launching pad
- Initial, brief questionnaire sent to state commissions:
 - ① Best contact person
 - ② Links to Commission billing rules and regulations
 - ③ Lists of important dockets with related issues
 - ④ Agency data about complaints by industry and topic
- Billing rules content review and summary
- Review of state utility commission complaints data
- Literature review, including sample utility bills, and utility and commission consumer information (e.g., press releases, brochures, web pages)



Literature review

- Review goals and objectives for billing and related communications rules, for commissions, utilities, consumers of different stripes, and society as a whole
- Historical trends in literature:
 - piecemeal progression over time
 - energy efficiency and content-labeling thrust in 80s-90s
 - competitive supplier billing since mid-90s
 - NRRI Report No. 12-07, *Finding the Right Words When Times Get Rough: How Commissions Can Address Difficult Communications* by Tom Stanton, July 2012



Literature review (continued)

- Recent and emerging trends:
 - Integrating communications channels and content
 - Enhancing customer segmentation
 - Increasing customer engagement
 - Using social media
 - Improving emergency communications
 - Finding opportunities for two-way communications resulting from grid modernization



Billing rules categories

Rule	# of States that include this topic
Minimum contents	46
Service deposits	47
Estimated bills	48
Master metering	39
Historical usage	26
Dispute resolution	43
Third-party agents	30
Levelized billing	33

Rule	# of States that include this topic
Payment methods	13
Payment assistance	30
Partial payments	20
Special payment plans	40
Denial, disconnection	46
Weather-related shutoff	42
Electronic billing	15
Customer data privacy	18

- Several other nearly-universal categories are not included (e.g., meter errors, accuracy and testing; unauthorized use; late payments and returned checks; and disconnections in cases of emergency or to protect health & safety)
- Industry types covered by rules varies by state



Billing topics related to low-income assistance and affordability

- Service deposits (included in 47 states' rules)
- Payment methods (13)
- Payment assistance (30)
- Partial payments (20)
- Special payment plans (40)
- Denial, disconnection (46)
- Weather-related shutoff (42)
- And, to a lesser extent:
 - Minimum contents (46)
 - Master metering (39)
 - Dispute resolution (43)
 - Third-party agents (30)
 - Levelized billing (33)

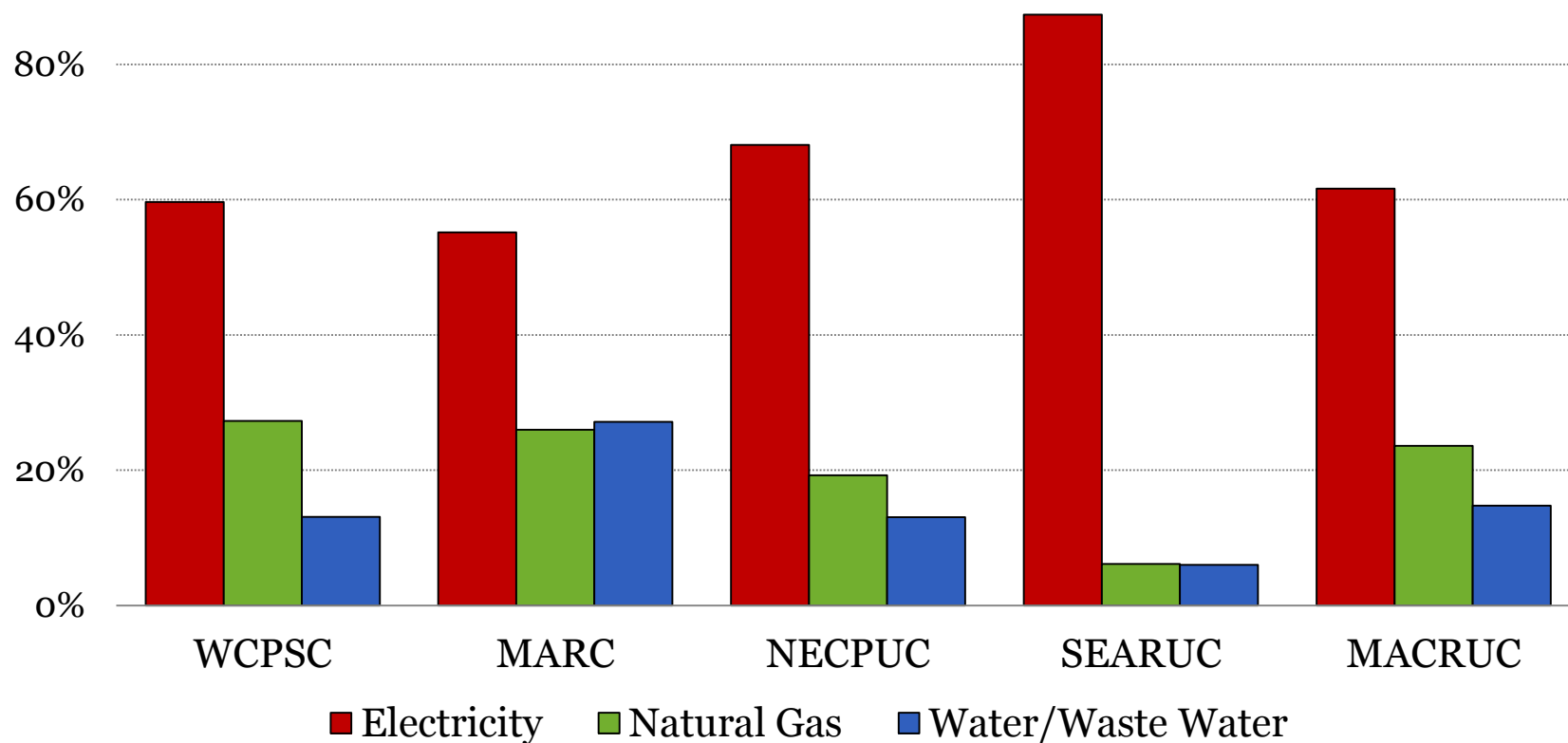


Complaints data overview

- Complaints data analysis of responses from 17 states
 - 23 states provided data on complaints by industry type
 - 13 states provided data on complaints by topics/issues
 - 6 additional states ran complaints database queries
- Timelines are not uniform
 - Length of time information collected varies
 - Year of data reporting varies
 - 2012 is earliest data used
- Complaints data varies widely, so only percentages are reported



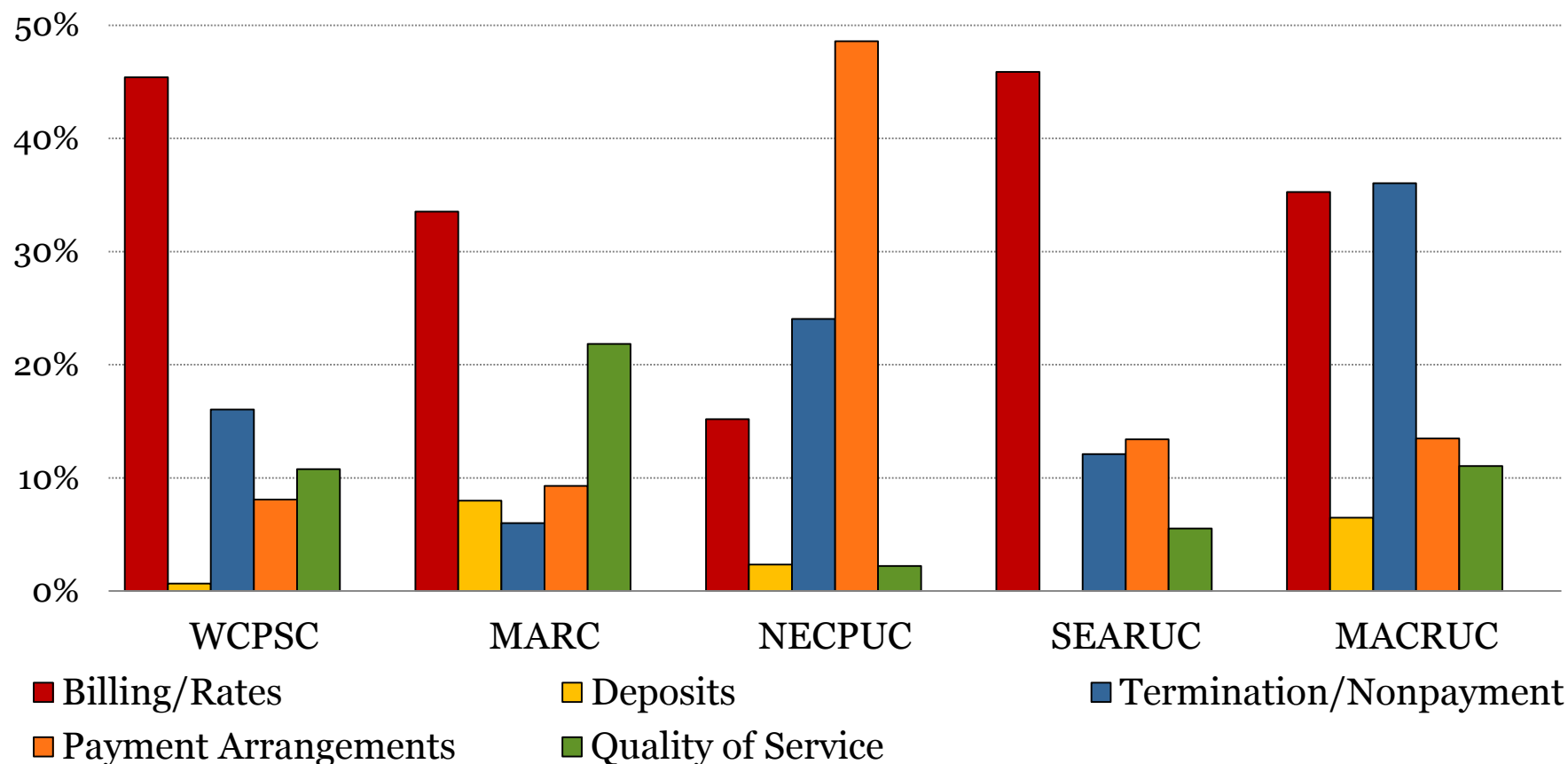
Percent of total complaints by region and industry



- WSPSC, MARC, NECPUC, SEARUC, and MACRUC are regions as defined by the National Association of Regulatory Utility Commissioners (NARUC).
- Author's construct from data provided by: Alaska, Arkansas, Arizona, Connecticut, Florida, Hawaii, Iowa, Indiana, Maine, Mississippi, New Hampshire, Nevada, Ohio, Oregon, Pennsylvania, Utah, Virginia, Washington, and West Virginia.



Percent of complaints by broad issue category



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- Authors' construct using data provided by: Alaska, California, Connecticut, Indiana, Maine, Montana, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Virginia, and West Virginia.



Complaints category names





What events stir up complaints?

- Do key events kick off numerous complaints?
 - Changes in bill format
 - Extreme weather
 - Sudden changes in rates that are large enough for customers to notice
- Could more careful observation of complaints help:
 - Identify and analyze complaints-initiating events
 - Better predict them
 - Prepare and disseminate information in advance to inoculate against large numbers of complaints



Existing issues

- Problems and shortcomings turn into informal complaints, formal complaints, and contested cases
 - 3 states have dockets involving new billing systems costs and capabilities
 - Master-metering dockets in Connecticut and Ohio
 - Michigan PSC docket about persistent problems with estimated billing practices
- Ongoing needs remain for continuous improvement in low-income protections and assistance



Emerging issues

- How is grid modernization changing the needs for billing and customer care communications
 - Electronic billing (currently in rules for 15 states)
 - Customer data privacy (currently in rules for 18 states)
 - Remote shut-off protections
 - Pre-paid services
 - Two-way communications between customers and utilities, meters and utilities, devices and utilities, & devices and devices
 - Use of social media by both utilities and commissions



Topics for further consideration

- Coordinate in-depth research about utility complaints
- Research in detail consumer needs and interests
- Identify future roles, performance metrics, and standards for utilities
- Revisit the issue of low-income protections and information available about assistance programs



Summary

- Major needs for improved communications and customer education remain:
 - Current dockets and hundreds of ongoing customer inquiries and complaints, informal and formal
 - Low-income assistance and protections
 - Call-center research and better coordination could help pinpoint needs
- Grid modernization is resulting in major opportunities at low incremental cost
 - Hundreds of companies are already developing these options, devices, and systems
 - Utility versus competitive roles remains a key issue



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Vertical Arrangements for Natural Gas Procurement by Utilities: Rationales and Regulatory Considerations

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Recent Interest in Going Long Term

- Reversal from the trend post-1985
- Natural gas prices still considered volatile
- Current low natural gas prices expected to increase at some unknown future time
- Market environment conducive for possible mutually beneficial long-term agreements between gas producers and utilities
- Long-term agreements for physical gas can take on three forms:
 - Contract between a utility and an independent entity
 - Utility owner of gas reserves (UOGR)
 - Utility-affiliate relationship

Reasons for Recent Interest in Long-Term Transactions

- Good timing (buyer's market, gas prices expect to increase)
- Good deals may be available to utilities because of cash strapped producers
- Some interest by unaffiliated gas producers
- Helping exploration and production (E&P) affiliates in these tough times for gas producers
- Integration of long-term hedging into a utility's gas portfolio
- Opportunity for utility earnings growth (unlike long-term contracting with non-affiliated gas producers)
- Cost-based prices offer more price stability than market-based prices
- Potential win-win outcome for both gas producers and utilities

Features of Vertical Arrangements

- *Vertical arrangement* can involve the utility self-supplying its gas either within a division of the utility or through an affiliate
- Main motive cited by utilities is long-term hedging
- Common structure is operating/non-operating working-interest model (UOGR)
- Rate basing of utility-owned gas reserves (UOGR)
- Typical time horizon is multi-decades
- Transfer price typically based on the gas operator's cost of service
- Utility forecasting of gas cost savings over time
- Risks shifted mostly to utility customers



Examples of Vertical Arrangements and Proposals

- Black Hills
- Questar Gas
- NorthWestern Energy
- Florida Power and Light
- Northwest Natural Gas
- Los Angeles Department of Water and Power
- Washington Gas Light

Portfolio Theory and Gas Procurement

- Three major objectives, sometimes conflicting
 - Reliable supply
 - Reasonable prices
 - Moderately volatile prices
- Physical and financial hedging
- A gas portfolio takes into account:
 - The price of natural gas and its volatility
 - Security of supply
 - Flexibility of gas supply
- Because of uncertainty and conflicting objectives, utilities diversify their gas portfolio
- Findings of 2012 NRRI survey on long-term contracting and hedging

Hedging 101

- Role of hedging (both short term and long term) within a utility's gas portfolio or integrated resource plan
 - ❑ Advance gas-procurement objective of price stability
 - ❑ May compromise other objectives and creates new risks
 - ❑ Drives up expected costs over time
- Basic questions relating to:
 - ❑ Hedging objectives
 - ❑ How much utilities should hedge
 - ❑ How they should hedge
 - ❑ Over what time period
- Hedging involves a fixed price and quantity
- Net benefits of hedging to utility customers
 - ❑ Real v speculative or exaggerated
 - ❑ Benefits should relate to how much customers are willing to pay for more stable prices
 - ❑ Hedging costs (e.g., losses or "regret")
- Utilities now hedge mostly on a short-term basis, but as some have recently contended, conditions are ripe for hedging more long term (e.g., hedging 10-20 years out)
 - ❑ What are the reasons?
 - ❑ Why haven't most done it?
 - ❑ Why now?

Three Kinds of Commercial Structures

- Three distinct categories of commercial structures
 - ✓ Spot
 - ✓ Long-term contracts with independent entity
 - ✓ Vertical integration (e.g., affiliate transactions, UOGR)
- Some insights from economic theory
 - ✓ Empirical and theoretical studies confirm the importance of transaction costs in determining the most efficient commercial structure
 - ✓ Vertical integration, according to some economists, is a last resort but justifiable under specific conditions
 - ✓ For example, when hazards of spot markets and contractual exchange are severe (e.g., market power, incomplete contracts, opportunism/hold-up), vertical integration offers potential certain advantages
 - ✓ Robust, liquid wholesale gas markets have made spot purchases the predominant commercial structure for gas procurement since the late 1980s



Features of Different Commercial Structures

Features of Commercial Structure	Positive	Negative	Comments
Spot purchase	<ul style="list-style-type: none"> • Low transaction costs in a liquid market • Utility gets the benefit of a low market price • Minimal commitment by buyer and seller • Parties have flexibility • Reference price for futures and multiple transactions 	<ul style="list-style-type: none"> • Risks of high prices during a supply-constrained situation • Contrary to utility/regulator preference for stable prices • Transaction costs from repeated purchases 	<ul style="list-style-type: none"> • Spot markets have become the predominate form of gas procurement since the late 1980s • Most utilities rely heavily on the spot market but complement it with physical contracts and financial derivatives in their gas portfolios
Contracting with an independent entity	<ul style="list-style-type: none"> • Long-term (quasi) hedge • Avoidance of repeated purchases • More secured supply • Assured revenues triggering needed investments 	<ul style="list-style-type: none"> • Potential for contract price deviating far from the market price • Counterparty/credit risk • Collateral requirement • Debt equivalence • High transaction costs under complex conditions 	<ul style="list-style-type: none"> • Long-term arrangements are rare • Gas producers reluctant to commit long term because of possible opportunity losses from rising prices • More secured supply (relative to spot purchases) probably overstated because of liquid spot markets and incidence of supply problems caused largely by transportation constraints
Vertical arrangement (e.g., UOGR, gas purchases from an E&P affiliate)	<ul style="list-style-type: none"> • Lower transaction cost than complex contractual arrangements • Economies of scope or integration • Long-term (quasi) hedge • Potentially more efficient than contracting with incomplete contracts, asset specificity, and opportunistic behavior 	<ul style="list-style-type: none"> • Potential for self-dealing abuse • Limited supply options and market deals • Risk from utility engaging in non-core activities • Managerial diseconomies 	<ul style="list-style-type: none"> • Conditions conducive to vertical arrangements don't seem to hold for gas procurement by utilities • Regulators need to beware of both self-dealing and risk-shifting aspects of vertical arrangements • Dubious benefits to utility customers relative to corporate shareholders • The only commercial structure for gas procurement where the utility or an affiliate can increase its earnings

The Challenges for Utilities

- **Setting the transfer price**
 - ★ Cost of gas production
 - ★ Market-based
 - ★ Base price plus escalation formula or index
 - ★ Fixed
 - ★ Competitive bidding
- **Being an active and knowledgeable participant**
- **Determining the value of gas reserves**
 - ★ The estimated amount of recoverable gas in the ground and chances for recovery
 - ★ The estimated capital costs for drilling and production
 - ★ The expected operating costs
 - ★ The forecasted market price for gas over the life of the reserves

Vertical Arrangements Raise Several Concerns

- The real motive is ambiguous, but likely related to higher earnings for the utility or its affiliate
- Gas cost savings are highly speculative and estimated to be small in some instances
- Long-term hedging seems to be the only legitimate motive, from the perspective of utility customers; but utilities fail to measure the benefits of hedging to customers and how it reduces the risk of their gas portfolio
- Vertical integration into gas production also presents the danger of providing an opportunity for a utility or its umbrella company to evade the reach of regulation
- UOGR imposes little risk on utilities but allows them to profit from the rate-basing of the investment
- From the perspective of utility customers, on the other hand, vertical integration seems to be a high-risk strategy for hedging
- Liquid wholesale gas markets (which minimize gas supply risk) plus highly speculative forecasts of long-term gas prices weaken the case for UOGR or other vertical arrangements

Last Thoughts

- Historically, regulators have disfavored vertical arrangements, and for good reason
- Regulators should ask the basic question: Under what conditions should utilities get in the gas production business?
- Utilities proposing vertical arrangements are implicitly assigning a high value to long-term hedging; this value may not reflect customers' perception of benefits
- Besides, utilities' vertical arrangements aren't pure hedging and, arguably, speculative
- Regulators should therefore ask themselves three questions about long-term hedging:
 - ❖ What are the benefits and costs to customers from stable prices over several years or even decades?
 - ❖ Is the current time ripe for long-term hedging?
 - ❖ What market and other conditions would make long-term hedging beneficial to utility customers?
- Even if regulators support long-term hedging, they should then ask whether a vertical arrangement with an affiliated or independent gas operator is preferable
- Regulators should demand that any long-term commitment balances the risk between utility shareholders and customers

Last Thoughts - *continued*

- One conclusion is that the typical reasons for companies to vertically integrate – as outlined in economic theory and observed in the real world – does not hold for utilities in their procurement of natural gas
- For example, the economic rationale for electric utilities owning coal mines does not apply to utility ownership of natural gas reserves
- Regulators should start with the premise that long-term contracting with an independent gas producer or middleman (e.g., marketer) would be preferable
- The most plausible explanation for vertical arrangements seems to be that the umbrella company composed of both the utility and the E&P affiliate, or the utility itself, is the largest beneficiary with utility customers bearing most of the risk
- We are likely to see more of these proposals in the next few years as (1) gas producers will feel financial strain if gas prices remain low and (2) utilities and their umbrella companies try to increase their earnings