

Article Title: Criteria | Governments | U.S. Public Finance: Applying Key Rating Factors To U.S. Cooperative Utilities Data: (EDITOR'S NOTE: —On Aug. 25, 2022, we republished this criteria article to make nonmaterial changes. See the "Revisions And Updates" section for details. This article has been partly superseded by "U.S. Municipal Retail Electric And Gas Utilities: Methodology And Assumptions," published Sept. 27, 2018. Electric distribution cooperatives are now in scope of those criteria and are no longer included under these criteria, which remain in effect, but now apply only to electric generation and transmission cooperatives.) Qualitative and quantitative rating factors have translated into solid credit ratings for cooperative utilities. Yet, the positive attributes and structural protections that are common to many of these utilities are not prevalent in all utilities in the sector. Moreover, because bondholder and lender protections are closely linked to the revenue stream's capacity to cover amortizing debt service, modest erosion of financial protections can impair credit ratings of cooperatives exhibiting narrow financial margins. The Role Of Cooperative Utilities Energy providers in these major groups meet U.S. electric needs: Cooperative utilities; Public power utilities that include federal projects that produce and sell wholesale power, and state agencies and municipal utilities engaged in wholesale and/or retail operations; Vertically integrated investor-owned utilities that produce and distribute electricity; and Investor-owned distribution companies that convey electricity procured from or distributed on behalf of competitive energy suppliers; Investor-owned utilities serve nearly three-quarters of America's electric needs. Public power utilities and cooperative utilities serve the balance, with public power utilities exhibiting a modest lead over cooperatives in annual energy sales. Generation and transmission (G&T;) cooperative utilities are not-for-profit corporations that generate or procure bulk power for sale to cooperative electric distribution utilities under wholesale power supply contracts. G&T; utilities are owned by their distribution cooperative members. Distribution cooperatives are owned by their retail customers. Electric distribution cooperatives were formed in the 1930s and beyond to build the infrastructure needed to meet the electric needs of sparsely populated rural America. The New Deal's Rural Electrification Administration (REA) was an important vehicle in forming distribution cooperatives, and its low-cost, long-term loans removed barriers to financing utility investments in rural areas. REA is now the U.S. Department of Agriculture's Rural Utilities Service (RUS), which still makes low cost loans to rural utilities. In the decades since their creation, portions of some cooperatives' rural service territories have evolved into prosperous suburbs of major metropolitan areas. Nevertheless, electric cooperative utilities mostly serve far-flung, sparsely populated areas that exhibit income levels below national averages. G&T; cooperatives were created by distribution cooperatives that banded together to achieve economies of scale in constructing generation and transmission assets to meet customers' needs. Business Risk As A Credit Quality Determinant Evaluating all utilities' financial performance begins with assessing business risk exposure. Greater business risk requires stronger financial metrics to achieve a given rating. The factors underlying our business risk assessments are similar for cooperative and public power utilities. In each case, the review focuses on a common set of qualitative elements representing six areas of inquiry: The regulatory environment in which the utility operates, including the resulting financial and ratemaking flexibility available to the utility; The markets served by the utility; The management team's strengths and the risks presented by management's business strategies; The utility's operational profile; The utility's competitive posture; and A review of legal documents that define the strength of bondholder or lender protections. The emphasis on each factor may vary for different utilities. The components of the business risk profile are scored on a 10-point scale and a weighted average is calculated to measure business risk compared to that of other utilities. The strongest score on the scale is 1, and the weakest is 10. The elements of the business risk profile are discussed below. The credit ratings that we assigned to cooperative utilities are founded on the qualitative attributes, financial performance and the structural protections commonly found among this group of utilities. Self-Regulation Can Bolster Credit Quality Most G&T; cooperatives set their own wholesale electric rates without oversight from state or federal regulators. G&T; cooperatives that borrow from RUS are exempt from FERC jurisdiction. While RUS borrowers must file rate schedules with RUS, oversight is limited to ensuring that rates are sufficient to recover costs, including repayment of RUS debt. The latitude most cooperatives possess to set their own rates in response to changing costs is a key driver of credit quality. Autonomous ratemaking authority sets these utilities apart from rate-regulated utilities and enables cooperative

utilities to respond quickly to changing circumstances and preserve sound financial margins without exposure to the regulatory delays or disallowances that can negatively influence the financial performance of regulated utilities. Credit quality cannot benefit if the latitude to exercise autonomous ratemaking authority does not translate into meaningful financial flexibility that can be deployed as costs increase. For credit quality to benefit, management and governing boards must demonstrate a willingness to overcome political obstacles to rate increases. The presence of power and fuel cost pass-through adjustment mechanisms can address credit uncertainties associated with either regulatory oversight or questions of political will. Yet, to support credit quality, these tools should have well-defined triggers that can provide timely realignment of revenues and expenses as costs rise. There is strong evidence that rate regulation can erode credit quality for cooperative utilities. That is not to say that all regulation is inconsistent with sound credit quality. Some regulators have demonstrated a commitment to sound credit quality. However, there are also instances where the financial performance of regulated cooperatives degraded after a regulator barred the utility from recovering investments in generation or other assets or precluded the full recovery of operating costs as they were incurred. In the most severe cases, regulatory impediments to cost recovery resulted in insolvency proceedings. Therefore, where cooperatives are subject to rate regulation, we examine whether the regulator is supportive of full and timely cost recovery and deferential to covenants protecting lenders. Even where G&T; utilities possess the financial flexibility of an absence of regulation, we must further examine whether their distribution members are subject to rate regulation. G&T; cooperatives' credit quality depends on the quality of the cash flowing up from member cooperatives. A G&T; can recover rising costs only if member systems can follow suit and adjust their retail rates. Therefore, we explore whether member distribution cooperatives have the ability to respond to changing costs embedded in revised G&T; rates and are able to adjust retail rates in lockstep with the G&T.;

Utility Markets Are Important To Credit Quality

The markets served by a utility determine the integrity and stability of the revenue stream. A diverse market with a sound economy usually bodes well for credit quality. As noted, G&T; credit ratings depend on the quality of revenues derived from member distribution cooperatives. We assess members' contributions by examining their legal obligations to fund G&T; debt service and operating expenses as well as the financial wherewithal to support those obligations. Consequently, a lot of emphasis is placed on the long-term, wholesale, power supply contracts between G&T; cooperatives and their member distribution systems. Optimally, wholesale power supply contracts extend throughout the life of G&T; debt to provide predictable debt service recovery. Shorter contracts remove predictability and could leave a G&T; exposed to competitive wholesale power markets. An absence of captive customers presents questions as to whether electric commodity can be sold to fund the recovery of capital investments and the price at which it might be sold. Wholesale power contracts typically require the G&T; to reallocate financial obligations of a defaulting member among non-defaulting members through intra-year rebudgeting that translates into an unlimited step-up. For G&Ts; with few member distribution cooperatives, the capacity of each distribution cooperative to meet obligations is an important determinant of credit quality. However, most G&T; cooperatives have large pools of distribution cooperative members. The combination of large pools of member distribution cooperatives and unlimited financial step-up obligations imposed on non-defaulting members of G&T; cooperative utilities allows us to examine the credit quality of G&T; cooperatives as a system without tying the rating to the credit quality of a member representing a weak link. We view the risk of multiple simultaneous defaults among a diverse pool of distribution cooperatives as slim. Even for large pools of distributions cooperatives, it is important to understand the composition of the customer base supporting the revenue stream. One component is members' financial performance, which is ascertained through audited financial statements and financial reports filed with RUS. Another element is the retail customers' economic capacity to service G&T; obligations. We examine service area wealth and income indicators using our proprietary economic databases. These databases help predict volatility or stability of revenues by identifying economic means and service territory demographic trends. We also look at the composition of the retail customer base. We expect cooperatives with concentrations of residential customers to provide more revenue stream stability than cooperatives with industrial customer concentrations since industrial customers' operations could be susceptible to changing economic conditions. Concerns that industrial customers might be attractive targets for cherry

picking by competitive energy providers have been tempered by the reduced interest in establishing competitive retail electric markets. In addition, the sparsely populated cooperative service territories are not particularly attractive to competitive retail energy providers since a high percentage of the cost of serving cooperative retail load is embedded in stringing distribution lines over vast distances. High distribution costs erode the benefits of reduced commodity prices. Thin customer density is borne out by low meter per line-mile ratios. Management's Key Role G&T; cooperatives are governed by boards of directors comprised of distribution cooperative representatives, including elected distribution cooperative board members and chief executives responsible for distribution cooperatives' operations. Board members' policies and strategic philosophies are important financial performance and credit quality determinants. Ratemaking tools that can yield strong, stable cash flows may be in conflict with an interest to give customers the lowest possible cost of service. Management's reconciliation of this dichotomy influences our analysis. A willingness to place capital at risk to diversify into competitive, non-electric businesses can erode positive credit attributes typically associated with the stability and predictability of a revenue stream derived from a captive customer base tethered to a G&T; by wholesale power contracts. Cohesiveness among board members is crucial to the successful adoption and implementation of strategic plans that are supportive of credit quality. Cohesiveness does not mean unanimity on all issues. Yet, fractious boards can become hamstrung and unable to respond to changing circumstances to protect credit quality. Divisiveness is sometimes a product of federal tax code provisions governing the allocation of cooperative voting rights. To preserve their tax-exempt status, G&T; cooperatives must grant each distribution member an equal vote, irrespective of relative contributions to the G&T; revenue stream. Members with different load profiles or growth rates have varying resource needs and priorities. Slow growth members could wield voting rights to frustrate a growing member's bid to add resources whose costs must be borne by all members under postage stamp rates that spread costs proportionally over all members. Alternatively, members with different load profiles may advance rate structures that allocate demand and energy charges that best suit their retail customers. In some extreme cases, those advancing a particular strategy have cast negative votes on business matters before the board in a bid to coerce an outcome on unrelated matters. Credit quality can suffer if the board becomes deadlocked on a wide range of matters that frustrate important financial or strategic objectives. Analyzing Operations To Identify Business Risks Our analysis of a cooperative's operational profile identifies business risks associated with the cooperative's owned generation and transmissions assets or supply arrangements with third parties. Our operational profile analysis considers these major factors: Performance of owned and contracted plant; Diversity within the supply portfolio; Market exposure; Hedging policies and risk-management strategies; and Capital needs and third-party resource-procurement processes. Performance of owned capacity is assessed with reference to the level and stability of production costs, capacity factors, and availability factors. We similarly analyze power purchase agreements. The metrics are compared with industry norms. Utilities can benefit from power purchase agreements that shift operating risk to the supplier through targeted heat rates, availability factors and capacity factors as conditions for payment. Contracts with a large supplier for system energy can provide asset diversity that a small utility might not otherwise be able to achieve were it to build generation to meet customers' needs. There are also risks inherent in power purchase agreements. The G&T;, as offtaker, may be exposed to the supplier's ability to perform and the agreement might place demands on the cooperative's liquidity in the form of collateral posting requirements. We view power purchase agreements' capacity payments as fixed obligations that are substitutes for debt financing. It is as though the offtaker has contracted with a third party to issue debt on its behalf. Because capacity payments fund a supplier's recovery of capital invested in generation assets, we treat capacity payments as fixed charges and calculate a fixed-charge coverage, as discussed more fully in the section on financial analysis that follows. It is important to understand how a G&T; manages its exposures to fuel and electricity price volatility as well as additional operational issues such as transportation bottlenecks that may impede the flow of these commodities. We review hedging and risk-management policies and evaluate in-house and outsourced expertise available to a cooperative to tackle these issues. Several cooperatives have outsourced risk management functions. A lack of management understanding of risk management issues can present credit concerns. We place value on management teams that can identify limitations of in-house capabilities and recognize

the financial and practical barriers to handling the risk management function internally. Just as distribution cooperatives banded together to achieve economies of scale in developing generation and transmission assets, G&T; cooperatives, and even some distribution cooperatives, are banding together to invest in the physical and intellectual capital necessary to interact with the wholesale electric and fuel marketplaces. Whether owned or contracted, high concentration levels in a single generation asset or fuel can create operational and financial exposures for lenders and creditors. Concentration can erode financial performance if lengthy unplanned generation outages or sharp fuel price increases occur. Many G&Ts; exhibit asset and fuel concentration. Most G&T;'s are highly dependent on coal and a number are highly dependent on natural gas. Concentration in these fuels can have operational and financial implications. Gas is subject to price volatility. Reliance on coal assets has taken on new significance because costs may rise as regulation of carbon and other emissions progresses. We evaluate the increasing resistance to and scrutiny of coal plants and the resulting operational and financial implications for existing and proposed coal-fired units. The high probability of stricter emissions mandates dictates that we consider uncertain costs of carbon controls and renewable directives. As we examine the burdens of emissions controls, we explore the following issues: How large is a utility's carbon footprint? How does the utility plan to respond to carbon constraints from an operational and a financial perspective? What would be the cost of addressing carbon emissions through emissions controls, fuel switching, energy efficiency programs, or conservation? In cases where utilities plan to dodge coal's difficulties by migrating to natural gas, we need to understand whether management has a strategy for responding to spikes that may occur in natural gas prices as demand increases. In some regions, questions may also arise about the sufficiency of natural gas supply and transportation as demand rises. Natural gas will not fully shield utilities from carbon emission mandates because it is not carbon-free. Its carbon footprint is about half of coal's. We also consider how utilities that are subject to renewable mandates will address reliability issues associated with generation resources that can't be dispatched to follow load. Distribution cooperatives engaged in a "wires" business face fewer direct operational challenges than do G&T; utilities. Nevertheless, distribution cooperatives' dependence on a G&T; translates into an exposure to the supplier's operational and financial issues. Competitive Business Pursuits Can Be Risky Despite the absence of a profit motive, some G&T; and distribution cooperatives have pursued competitive businesses. Pursuits beyond the core business of providing customers with attractively priced, reliable electricity have had varying degrees of success. Affiliate or subsidiary companies are often created for conducting these businesses. Some cooperatives have electric marketing arms whose proceeds subsidize member rates. Some sell surplus power in wholesale markets while others purchase power for resale to take advantage of regional price differentials. The financial risks related to these activities include exposure to potentially volatile wholesale markets. Unless commitments to supply electricity can be suspended, they can present financial and operational challenges if internal or third party power supply is disrupted or native load responsibilities increase due to spikes in customer demand. Moreover, such arrangements can present contingent liquidity requirements, such as exposure to collateral calls. Of greater concern are cooperatives that pursue competitive businesses requiring skills beyond management's day-to-day expertise. These ventures include businesses tangential to electric supply as well as speculative businesses that are unrelated to the metered customer. As noted, the wholesale power contract serves as a vehicle for recovering funds invested in a cooperative's electric operations. By comparison, investments in competitive businesses lack the protections captive customers provide. If meaningful capital is placed at risk through investments in competitive businesses, a cooperative will need to demonstrate a robust financial cushion capable of absorbing the financial impact of a degraded investment if the outstanding rating assigned prior to the investment is to be preserved. Electric utility subsidization of competitive businesses during start-up or to offset operating losses can negatively influence a credit rating. In evaluating the credit implications of competitive businesses, we analyze standalone and consolidated financial statements of the cooperative and its ancillary businesses to determine: The size of competitive operations relative to the core electric business; Expansion plans for the competitive business; The amount of debt attributable to the competitive business; The electric business' commitments to support affiliate or subsidiary operations, either through explicit guarantees or board policies to infuse equity and liquidity; Historical profitability and projected performance of the

competitive business; and The level of competition facing the product or service provided. Examining Rate Competitiveness The specter of pervasive competition for retail loads anticipated in the 1990s and early 2000s has not materialized. More recently, some states have moved to once again regulate investor-owned utilities and eliminate new opportunities for customer choice. Although the threat that retail competition might have presented to a utility's revenue stream has abated, competitiveness of rates remains an important component of our analysis. Even in the absence of direct access to competitive suppliers, customers need to be satisfied that their retail rates are reasonable. Today's customers are more mindful of how their rates compare to those of other utilities. Competitiveness, like the affordability of rates we examine as part of our analysis of markets served by a utility, is an important indicator of ratemaking flexibility and the attendant financial flexibility to respond to changing circumstances. As not-for-profit membership organizations, cooperatives employ cost-based rates that cover operating costs and debt service, fund a portion of capital costs, and provide a small measure of financial cushion to meet lender and/or creditor requirements or expectations. Profits are not built into the equation. Even so, retail cooperative rates can be high because of the increased costs of distributing electricity in sparsely populated service territories. Resulting high distribution rates, combined with generally limited income levels, can erode financial flexibility.

Lender And Creditor Legal Protections The wholesale power contract bond Wholesale power supply contracts bind distribution cooperatives to G&Ts; and contribute to a secure revenue stream. The contracts' legal protections benefit cooperative utilities' lenders and trade creditors by enhancing prospects for the recovery of investments in these utilities and the receipt of trade receivables. Wholesale power contracts are take-and-pay requirements contracts. They dictate that all electricity needed by distribution cooperatives must be procured through the G&T.; They also provide for intra-year G&T; budget adjustments in the event of shortfalls whether due to rising costs or defaulted member obligations. The rebudgeting tool imposes an unlimited step-up requirement on members to keep the G&T; whole. Consequently, a G&T; can count on its member distribution cooperatives to support its debt and trade obligations. Wholesale power contracts extending through the life of outstanding debt obligations provide a secure revenue stream from dedicated energy off-takers. It is common for G&T; cooperatives to ask members to extend contracts as the G&T; embarks on large capital projects with useful lives and debt extending beyond the outstanding contracts' expiration. In many cases, members have extended contracts without any qualms. However, in recent years some members have used the contract extension request as leverage to advance a particular agenda or strategy. Such tactics can frustrate the ability of cooperatives to carry out strategic objectives or achieve financial targets, which could negatively influence credit quality. The combination of the breadth of the cooperative service territories, as reflected in the large average number of member distribution cooperatives in each G&T;, the sizable retail customer bases and the unlimited step-up obligations imposed on non-defaulting members of a G&T;, allows us to examine a G&T;'s credit quality as a system without tying the rating to the credit quality of a member that represents a weak link. We view the risk of multiple simultaneous defaults among a diverse pool of distribution cooperatives as slim. This approach parallels the analytical methodology for the evaluation of municipal joint action agencies. There are limited exceptions to the all-requirements paradigm. Members of a handful of G&T; cooperatives can procure prescribed portions of their energy needs outside the cooperative structure. All energy needs beyond the permitted exception must be procured from the G&T;, ensuring that it has a vehicle for recovering fixed and variable costs. Indenture covenants provide limited cash flow protection Cooperative utilities largely rely on RUS and two cooperative lending institutions, CoBank and National Rural Utilities Cooperative Finance Corporation (CFC), to finance capital needs. Mortgage indentures executed between utilities and RUS govern RUS, CFC and CoBank financings. The RUS indentures' principal measures of financial performance are "margins-for-interest" (MFI) and "times-interest-earned" (TIER) ratios. Neither test requires that rates cover total annual amortizing debt service requirements. Only a limited number of indentures contain debt service coverage requirements. In some cases, mortgage indentures require that MFI and TIER targets only be satisfied in two of three years. Because the TIER and MFI ratios do not adequately represent a utility's financial capacity to cover amortizing principal and interest payments and do not paint a full picture of financial capacity or protections, we employ a debt service coverage analysis irrespective of whether a utility is legally bound to meet an all-in debt-service

coverage test. We look to the income statement and the statement of cash flows to ascertain the strength of the financial cushion available to shield lenders and creditors from changing circumstances. The MFI and TIER tests and most indenture-based debt service coverage tests are calculated solely with reference to the income statement. Cash flows analysis sheds light on elements of financial performance that may not be apparent from the income statement since revenue and expense deferrals are common among cooperative utilities, and the marking of power supply arrangements to market can have income statement implications. Historically, RUS borrowers' mortgages proscribed parity borrowing unless approved through a lien accommodation. In recent years, RUS permitted a number of cooperatives to restate indentures to allow parity borrowing without a lien accommodation. However, certain financial thresholds must be met. Permitted parity lenders include CFC, CoBank and capital markets. Prerequisites financial benchmarks for parity borrowing are not uniform among the revised indentures, so we review each indenture's unique provisions. RUS is working to establish a master indenture to provide consistency as cooperatives restate their indentures in the future. RUS' new indentures are corporate-style in many respects and do not provide high levels of lender protection. While a few contain debt service coverage tests, most focus exclusively on net revenues coverage of debt interest, as did predecessor indentures. The indentures also govern permitted additional indebtedness. Like corporate indentures, additional debt is generally allowed if elements of "bondable additions" tests are met. Such tests are not based on the strength of net revenues or cash flows to support additional debt service. Rather, they focus on maintaining a baseline equity investment. Additional debt may be issued so long as a positive equity ratio is preserved. For most cooperatives, a weak 10% equity investment is targeted in keeping with the leverage commonly exhibited by cooperatives. This threshold is low as compared to corporate utility indentures that require higher equity contributions when debt-financing asset additions. A handful of cooperative utilities have elected to forego RUS borrowing, despite the low interest rates. These cooperatives rely on capital markets to achieve greater flexibility in their financing activities. The RUS loan approval process can be protracted and can impose financial and operational limitations on a utility. In addition, there are questions as to whether RUS funds will be available to finance baseload generation capacity in coming years. Cooperative utilities' capital market financings use corporate-style indentures with liberal provisions that are similar to the modern RUS indentures and are analyzed accordingly. Financial Analysis Lender and creditor protections derived from financial performance are evaluated through debt service coverage ratios, liquidity, leverage analysis and external financing needs. Financial analysis of cooperative utilities closely tracks our municipal utilities' and public power joint-action agencies' rating methodology. Like public power utilities, G&T; cooperatives' highly leveraged capital structures reflect an inability to access capital markets to fund a perpetual equity cushion. Low, but sound debt service coverage ratios reflect the use of amortizing debt and an absence of profit-related revenues. Cooperative utilities with high leverage and sufficient debt service coverage ratios can achieve sound credit ratings upon a demonstration of strong qualitative attributes. Debt service coverage ratios Cash available from current operating revenues to pay debt service is the principal focus. We use the income statement to calculate net revenues available for debt service. (See Table 1) Non-cash accruals are eliminated from revenues and expenses. We also look to cash flow statements to identify deferrals of revenues and expenses, mismatches between depreciation expenses and amortizing principal that might erode cash available to service debt, and the income statement effects of marking power supply arrangements to market. Even deferrals of revenues can present issues because ultimate income statement revenue recognition may lack corresponding cash available to service debt during the period of accrued income recognition. Table 1 Key Cash Flow Metrics Debt Service Coverage (DSC): Net revenues available for debt service divided by scheduled cash principal and interest payments. Net revenues are defined as operating revenues plus investment income less operating expenses net of depreciation and amortization items. Cash from operations divided by scheduled cash principal and interest payments. Funds from operations divided by scheduled cash principal and interest payments. Funds from operations are defined as net income from continuing operations plus depreciation, amortization, deferred income taxes, and other non-cash items. Fixed Charge Coverage (FCC): Similar to debt service coverage, but adds to both the numerator and denominator an adjustment for fixed charges attributable to leases and power purchase agreements' capacity payments. Internal Funding

Ratio: Net cash flow (FFO less dividends such as repatriation of cooperative patronage capital), divided by capital expenditures. Free Cash Flow: Net cash flow less capital expenditures. Amortizing debt and high leverage lead to narrow cash flow coverage of debt service. Yet, in the cooperative sector, debt service coverage in the range of 1.1x can support investment grade ratings because of protections provided by a secure, captive revenue stream, ratemaking flexibility, and a generally narrow strategic focus. We do not publish medians aligning the preceding ratios with specific ratings for cooperative utilities because our ratings are an amalgamation of qualitative and quantitative factors. Our analysis is both a historical and forward looking analysis. We examine the strength and consistency of historical financial performance and evaluate prospects for future financial performance. Actual performance is benchmarked against the utility's prior projections of future performance to identify deviations and understand their rationale. In examining financial projections, we evaluate the reasonableness of key assumptions and apply stress tests to determine cash flow impacts of changes in fuel prices, capital costs and demand. We also consider the level of retail rate adjustments that may be needed to meet financial covenants and preserve metrics upon increases in debt or operating expenses. In calculating debt-service coverage, consideration is given to some fixed obligations that are not reflected on the balance sheet, particularly those related to power purchase agreements' capacity payments and long-term lease payments. We view power supply agreements as creating fixed, debt-like, financial obligations that represent substitutes for direct, debt-financed investments in generation capacity. In a sense, a utility that has entered into a power purchase agreement has contracted with a supplier to make the financial investment on its behalf. A "fixed charge coverage ratio" is used to assess the adequacy of cash flows to service the fixed financial obligations. (See table 2). Table 2 Fixed-Charge Ratio Calculation Cash flow available for debt service or income statement net revenues available for debt service + fixed obligations recorded as operating expenses. Divided by: Principal repayment + interest expense + fixed obligations recorded as operating expenses. Fixed obligations' adjustments to financial metrics are a tool for comparing utilities that finance and build generation capacity with those that purchase capacity and incur off balance sheet obligations to satisfy customer needs. That said, utilities could benefit from contracting for supply because these agreements typically shift various risks to suppliers, such as construction risk and operating risks. Power purchase agreements can also provide utilities with asset diversity that might not have been achievable through self-build. Evaluating debt service coverage ratios for the limited group of cooperatives that rely heavily on non-amortizing debt with bullet maturities requires a hybrid analysis that incorporates elements derived from the rating methodology for both public power and investor-owned utilities. In such cases, non-amortizing debt creates considerably stronger annual debt service coverage than would be expected of a utility whose debt amortizes like a mortgage and the coverage must be discounted unless bullet maturities are staggered to create level debt service. Refinancing risk and capital market access are also factored into the analysis of utilities that use non-amortizing debt. Evaluating debt leverage Cooperatives' capital structures vary according to the type of service they offer. G&T; cooperatives are heavily leveraged reflecting the capital-intensive nature of their business and their indentures' permissive debt leverage covenants. By comparison, less-capital intensive distribution cooperatives exhibit more favorable leverage ratios. Yet, because the distribution cooperatives have authorized and committed to pay G&T; debt issued on their behalf, we analyze distribution cooperatives by evaluating fixed charge coverage ratios that measure the capacity of the distribution cooperatives to service direct debt and G&T; debt. We measure the financial burdens created by leverage in the several ways. (See Table 3). Table 3 Financial Burden Calculation Debt to total capitalization (This debt leverage ratio divides total on-balance sheet debt by the sum of equity and total debt). Debt to net plant: Calculates total debt as a percentage of depreciated net plant, property and equipment. Debt per kW of installed capacity, kW of peak demand, and customer meters: These debt measures provide a basis for comparing utility systems to assess the value derived from and the efficiency of their capital expenditures. Net variable debt to total debt: Measures the degree of floating interest rate exposure in a cooperative's debt structure, adjusting for floating rate debt that is hedged. Includes short-term debt, adjusted for seasonal balances. Revisions And Updates This article was originally published on Nov. 21, 2007. Changes introduced after original publication: Following our periodic review in 2015, we updated the contact list and the "Related Criteria And Research" list and clarified the text describing other sectors that have

similar business risk assessment factors to those found in cooperative utilities. Following our periodic review completed on Nov. 27, 2016, we updated the "Related Criteria And Research" list. Following our periodic review completed on Nov. 20, 2017, we added the "Revisions And Updates" section. On Jan. 2, 2019, we republished this criteria article to make nonmaterial changes. We updated the contact information. On Sept. 24, 2021, we republished this criteria article to make nonmaterial changes to update the contact information. On Aug. 25, 2022, we republished this criteria article to make nonmaterial changes to update related criteria references and contact information. Related Publications Related Criteria Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021 Assigning Issue Credit Ratings Of Operating Entities, May 20, 2015 Contingent Liquidity Risks In U.S. Public Finance Instruments: Methodology And Assumptions, March 5, 2012 Methodology: Definitions And Related Analytic Practices For Covenant And Payment Provisions In U.S. Public Finance Revenue Obligations, Nov. 29, 2011 Principles Of Credit Ratings, Feb. 16, 2011 Wholesale Utilities, May 24, 2005 Related Research U.S. Electric Cooperative Utility Ratings Show Resilience In A Time Of Flux, June 7, 2016