

utilization. The Company has approximately \$33.7 of tax-effected state net operating loss carryforwards (without regard to federal benefit of state). Some of these net operating loss carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized. The state net operating loss carryforwards are primarily related to Florida and New Jersey, but the Company has smaller net operating losses in various other states. The Company has approximately \$65.6 of tax-effected foreign net operating loss carryforwards. Some of these net operating loss carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized. The foreign net operating loss carryforwards increased from 2018 to 2019 primarily due to the recognition of a discrete tax benefit of \$41.0 in connection with a foreign restructuring plan allowing the future realization of net operating losses. Additionally, the Company has \$5.0 of U.S. federal and state research and development tax credit carryforwards (without regard to federal benefit of state). Some of these research and development credit carryforwards have an indefinite carryforward period, and those that do not will begin to expire in 2020 if not utilized.

As of December 31, 2019, the Company determined that a total valuation allowance of \$36.3 was necessary to reduce U.S. federal and state deferred tax assets by \$15.4 and foreign deferred tax assets by \$20.9, where it was more likely than not that all of such deferred tax assets will not be realized. As of December 31, 2019, the Company believes it is more likely than not that the remaining net deferred tax assets will be realized based on the Company's estimates of future taxable income and any applicable tax-planning strategies within various tax jurisdictions.

The Company recognizes in the Consolidated Financial Statements only those tax positions determined to be "more likely than not" of being sustained upon examination based on the technical merits of the positions. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	2019	2018	2017
Beginning balance	\$ 63.6	\$ 52.2	\$ 38.7
Additions for tax positions of prior periods	2.9	2.4	24.8
Additions for tax positions of the current period	4.2	6.9	4.2
Additions due to acquisitions	1.9	4.4	—
Reductions for tax positions of prior periods	(0.3)	(0.4)	(11.2)
Reductions attributable to settlements with taxing authorities	—	—	(1.5)
Reductions attributable to lapses of applicable statute of limitations	(2.5)	(1.9)	(2.8)
Ending balance	\$ 69.8	\$ 63.6	\$ 52.2

The total amount of unrecognized tax benefits that, if recognized, would impact the effective tax rate is \$68.2. Interest and penalties related to unrecognized tax benefits were \$1.8 in 2019 and are classified as a component of income tax expense. Accrued interest and penalties were \$8.7 at December 31, 2019 and \$6.9 at December 31, 2018. During the next twelve months, it is reasonably possible that the unrecognized tax benefits may decrease by a net \$6.3, mainly due to anticipated statute of limitations lapses in various jurisdictions.

The Company and its subsidiaries are subject to examinations for U.S. federal income tax as well as income tax in various state, city and foreign jurisdictions. The Company's federal income tax returns for 2016 through the current period remain open to examination and the relevant state, city and foreign statutes vary. The Company does not expect the assessment of any significant additional tax in excess of amounts reserved.

The Tax Act was signed into U.S. law on December 22, 2017. The Tax Act contains provisions which impact the Company's income taxes including a reduction in the U.S. federal corporate income tax rate from 35% to 21%, a one-time deemed mandatory repatriation tax imposed on all undistributed foreign earnings, and the introduction of a modified territorial taxation system.

The SEC released Staff Accounting Bulletin No. 118 ("SAB 118") on December 22, 2017 to provide guidance where the accounting under ASC 740, *Income Taxes*, is incomplete for certain income tax effects of the Tax Act upon issuance of financial statements for the reporting period in which the Tax Act was enacted. SAB 118 provides that if a company could determine a reasonable estimate, that estimate should be reported as a provisional amount and adjusted during a measurement period. If a company is unable to determine a reasonable estimate, no related provisional amounts would be recorded until a reasonable estimate can be determined, within the measurement period. The measurement period extends until all necessary information has been obtained, prepared, and analyzed, but no longer than 12-months from the date of enactment of the Tax Act.

The Company intends to distribute all historical unremitted foreign earnings up to the amount of excess foreign cash, as well as all future foreign earnings that can be repatriated without incremental U.S. federal tax cost. Any remaining outside basis differences relating to the Company's investments in foreign subsidiaries are no longer expected to be material and will be indefinitely reinvested.

(8) LONG-TERM DEBT

On September 23, 2016, Roper entered into a five-year \$2.5 billion unsecured credit facility, as amended December 2, 2016, (the "2016 Facility") with JPMorgan Chase Bank, N.A., as administrative agent, and a syndicate of lenders, which replaced its previous \$1.85 billion unsecured credit facility dated as of July 27, 2012, as amended as of October 28, 2015 (the "2012 Facility"). The 2016 Facility comprises a five year \$2.5 billion revolving credit facility, which includes availability of up to \$150.0 for letters of credit. Roper may also, subject to compliance with specified conditions, request term loans or additional revolving credit commitments in an aggregate amount not to exceed \$500.0. At December 31, 2019, there were \$0.0 of outstanding borrowings under the 2016 Facility.

The 2016 Facility contains affirmative and negative covenants which, among other things, limit Roper's ability to incur new debt, enter into certain mergers and acquisitions, sell assets and grant liens, make restricted payments (including the payment of dividends on our common stock) and capital expenditures, or change its line of business. Roper is also subject to financial covenants which require the Company to limit its consolidated total leverage ratio and to maintain a consolidated interest coverage ratio. The most restrictive covenant is the consolidated total leverage ratio which is limited to 3.50 to 1.

The 2016 Facility provides that the consolidated total leverage ratio may be increased, no more than twice during the term of the 2016 Facility, to 4.00 to 1 for a consecutive four quarter fiscal period per increase (or, for any portion of such four quarter fiscal period in which the maximum would be 4.25 to 1). In conjunction with the Deltek acquisition in December of 2016, we increased the maximum consolidated total leverage ratio covenant to 4.25 to 1 through June 30, 2017 and 4.00 to 1 through December 31, 2017.

The Company was in compliance with its debt covenants throughout the years ended December 31, 2019 and 2018.

On August 26, 2019, the Company completed a public offering of \$500.0 aggregate principal amount of 2.35% senior unsecured notes due September 15, 2024 and \$700.0 aggregate principal amount of 2.95% senior unsecured notes due September 15, 2029 (the "2019 Offering"). The notes bear interest at a fixed rate and are payable semi-annually in arrears on March 15 and September 15 of each year, beginning March 15, 2020. The net proceeds were used to fund a portion of the purchase of iPipeline Holdings, Inc.

On August 28, 2018, the Company completed a public offering of \$700.0 aggregate principal amount of 3.65% senior unsecured notes due September 15, 2023 and \$800.0 aggregate principal amount of 4.20% senior unsecured notes due September 15, 2028 (the "2018 Offering"). The notes bear interest at a fixed rate and are payable semi-annually in arrears on March 15 and September 15 of each year, beginning March 15, 2019.

On December 19, 2016, the Company completed a public offering of \$500.0 aggregate principal amount of 2.80% senior unsecured notes due December 15, 2021 and \$700.0 aggregate principal amount of 3.80% senior unsecured notes due December 15, 2026. The notes bear interest at a fixed rate and are payable semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2017.

On December 7, 2015, the Company completed a public offering of \$600.0 aggregate principal amount of 3.00% senior unsecured notes due December 15, 2020 and \$300.0 aggregate principal amount of 3.85% senior unsecured notes due December 15, 2025. The notes bear interest at a fixed rate and are payable semi-annually in arrears on June 15 and December 15 of each year, beginning June 15, 2016.

On November 21, 2012, the Company completed a public offering of \$500.0 aggregate principal amount of 3.125% senior unsecured notes due November 15, 2022. The notes bear interest at a fixed rate and are payable semi-annually in arrears on May 15 and November 15 of each year, beginning May 15, 2013.

In September 2009, the Company completed a public offering of \$500.0 aggregate principal amount of 6.25% senior unsecured notes due September 1, 2019 (the "2019 Notes"). During 2018 a portion of the net proceeds of the 2018 Offering were used to redeem all of the \$500.0 of outstanding 2019 Notes. The Company incurred a debt extinguishment charge in connection with the redemption of the 2019 Notes of \$15.9, which represents the make-whole premium and unamortized deferred financing costs.

Roper may redeem some or all of these notes at any time or from time to time, at 100% of their principal amount, plus a make-whole premium based on a spread to U.S. Treasury securities.

The Company's senior notes are unsecured senior obligations of the Company and rank equally in right of payment with all of Roper's existing and future unsecured and unsubordinated indebtedness. The notes are effectively subordinated to any of its existing and future secured indebtedness to the extent of the value of the collateral securing such indebtedness. The notes are not guaranteed by any of Roper's subsidiaries and are effectively subordinated to all existing and future indebtedness and other liabilities of Roper's subsidiaries.

Total debt at December 31 consisted of the following:

	2019	2018
2016 Facility	\$ —	\$ 865.0
\$600 3.000% senior notes due 2020	600.0	600.0
\$500 2.800% senior notes due 2021	500.0	500.0
\$500 3.125% senior notes due 2022	500.0	500.0
\$700 3.650% senior notes due 2023	700.0	700.0
\$500 2.350% senior notes due 2024	500.0	—
\$300 3.850% senior notes due 2025	300.0	300.0
\$700 3.800% senior notes due 2026	700.0	700.0
\$800 4.200% senior notes due 2028	800.0	800.0
\$700 2.950% senior notes due 2029	700.0	—
Other	7.7	3.0
Less unamortized debt issuance costs	(32.4)	(26.3)
Total debt	5,275.3	4,941.7
Less current portion	602.2	1.5
Long-term debt	\$ 4,673.1	\$ 4,940.2