

Approved at the 9/13/2019 meeting
BOARD OF TRUSTEES OF THE COLORADO SCHOOL OF MINES
MINUTES OF THE BOARD MEETING
Monday, May 20, 2019
COLORADO SCHOOL OF MINES
Starzer Welcome Center, 1812 Illinois Street, Golden, CO 80401

I. Trustee Breakfast – 7:30 a.m., President’s Residence, 1722 Illinois Street

Executive Session

To discuss legal advice pursuant to §24-6-402 (3)(a)(II), C.R.S.; employee matters pursuant to §24-6-402(3)(b)(I), C.R.S.; administrative actions and investigative reports involving students pursuant to §24-6-402(3)(b)(I), C.R.S.; property purchase pursuant to § 24-6-402(3)(a)(I); and matters required to be kept confidential by federal law or statute statutes, pursuant to §24-6-402(3)(a)(III), C.R.S.

8:00 a.m. Motion to move into executive session by Trustee Haddon; seconded by Trustee McNeil. Motion approved 7-0.

Trustees present: Chairman Jorden, Trustee’s Haddon, McNeil, Salazar, Sanders, Starzer and Burgess.

Mines executives and directors present: President Johnson, Interim Provost Boyd, EVP Volpi, VPSL Fox, VP Tompkins, VP Han and VPGC Walker.

8:25 a.m. Motion to move to regular session by Trustee Haddon; seconded by Trustee McNeil. Motion approved 7-0.

II. Regular Meeting – Starzer Welcome Center, Wagner Boardroom

8:40 a.m. Regular session resumed and called to order by Chairman Jorden.

Trustees present: Chairman Jorden, Trustee’s Haddon, McNeil, Salazar, Sanders, Starzer and Burgess.

Mines executives and directors present: President Johnson, Interim Provost Boyd, EVP Volpi, VPSL Fox, VPRTT Tompkins, VP Han and VPGC Walker.

Tom Jorden recognized Sevy Swift for his service to the Board for two terms and presented him with a silver certificate of appreciation.

a. Consent Agenda

The minutes from the April 5, 2019, April 29, 2019 and May 3, 2019 meetings were submitted for approval.

Trustee Starzer motioned to approve the minutes as presented; seconded by Trustee Burgess. Motion approved 7-0.

b. Reports and Updates

Board Committee Reports Trustee Haddon reported that the Finance and Audit Committee (FAC) met on May 6, 2019. They reviewed the financial statement as of March 31, 2019, the Fiscal Year 2020

Budget, the Subsurface Frontier financing options and the Five-year Capital plan. The committee was introduced to the newly hired internal auditors from RubinBrown LLC.

President's Report President Johnson thanked the Trustees for all of the activities and events they participated in last month. Dr. Johnson noted and recognized Dr. Boyd's final Board meeting as Interim Provost.

Financial Report Ms. Volpi reviewed the financial statements through for third quarter ending March 31, 2019. She reviewed the balance sheet noting assets were up 3.3% and liabilities down 2.4%, both consistent with this time of year. Ms. Volpi reviewed how the pension liability is reported and recorded on the balance sheet and income statement. She reported the net position is up 31.4% due to most of the annual revenue being earned by the third quarter and expenses incurred through the third quarter.

Ms. Volpi reviewed the income statement noting revenue is up 6.6% due to an increase of tuition and fees, and an increase in funding from grants and contracts, primarily federal. She reported the total operating expense is up 7% due to compensation increases for the year, new full time employees, sponsored programs, and operations of plant due to non-capitalize-able repairs and maintenance. She noted the non-operating revenue investment income is down due to the market downturn in December resulting in a loss to the endowment.

Ms. Volpi reviewed the third quarter forecast noting that expenses and reserves are \$1 million higher than projected. She noted that net activity is projected to end the year just under \$1 million; however, due to one-time revenue occurrences in fiscal year 2019, it is anticipated that the carryover to the next year will be a deficit.

There was brief discussion regarding the newly hired auditors, and it was noted that Mines is now outsourcing the internal chief audit executive position.

Faculty Senate Report Dr. Tzahi Cath reported on ongoing Faculty Senate business. He reviewed the most recent election of four new Senators and announced that the next Faculty Senate President is Marcelo Simoes from Electrical Engineering. He reported that Dr. John Speer, Metallurgical and Materials Engineering, is the next Faculty Distinguished Lecturer. Dr. Cath provided information on what is being updated in the Faculty Senate bylaws. He also provided summary information for an ad hoc Senate committee who reviewed and recommended changes to our process for faculty evaluation of classroom instruction. Many of the recommendations will be piloted in the Fall 2019 semester. Dr. Cath was recognized by Dr. Boyd and the Board for his service to the institution over the past year as Faculty Senate President.

c. Action Items

Faculty Handbook Recommendations Dr. Boyd requested the Board consider and approve proposed additions and modifications to the Faculty Handbook as presented and vetted by the campus Handbook Committee and reviewed by the campus community during the mandatory 30-day comment period. Dr. Boyd provided a summary of the proposed material changes as listed below. He also noted that the Board was provided a link to red-lined versions of the Handbook that incorporated these changes. The Board requested that they receive an electronic copy of the Faculty Handbook once updated with these changes.

Motion to approve the Faculty Handbook recommendations as proposed made by Trustee Haddon; seconded by Trustee Salazar. Approved 7-0.

MATERIAL HANDBOOK CHANGES FOR BOARD CONSIDERATION		
Subject	Description	Handbook Sections
Teaching Faculty Contractual Language	<ul style="list-style-type: none"> Clarify language related to Teaching Faculty contractual processes explicitly recognizing faculty who have been at the institution three years or longer are on two-year contracts renewed annually. Change non-renewal notification requirement from September 1 to August 1. 	<ul style="list-style-type: none"> 4.1.2 A, 9.2.1 A
Graduate Faculty Appointments	<ul style="list-style-type: none"> Define authority to appoint Graduate Faculty to TTT Faculty, and Professors of Practice and Teaching Faculty with Graduate Faculty status 	<ul style="list-style-type: none"> 4.3.2, 4.3.3
University Emeritus Appointments	<ul style="list-style-type: none"> Eliminate University Emeritus appointments 	<ul style="list-style-type: none"> 4.1.5
Contract Pay Periods	<ul style="list-style-type: none"> Revise Handbook language to reflect transition for faculty pay periods from 9-month to 10-month. 	<ul style="list-style-type: none"> 4.11.2
Instructional Development Assignment	<ul style="list-style-type: none"> Define alternate assignment for instructional faculty to improve pedagogical development and instructional delivery 	<ul style="list-style-type: none"> 6.1.6
Grievance Committee	<ul style="list-style-type: none"> Restructure size, membership, and operations of Grievance Committee 	<ul style="list-style-type: none"> 12.14
Research Advisory Board	<ul style="list-style-type: none"> Create Research Advisory Board to advise VPRTT on issues related to research at Mines 	<ul style="list-style-type: none"> 12.15
Technology Fee Committee	<ul style="list-style-type: none"> Define Technology Fee Committee as a University Committee 	<ul style="list-style-type: none"> 12.16

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines hereby approves the above listed modifications to the Faculty Handbook.

Approval of Grant Easement of City of the Golden Ms. Volpi requested the Board consider and approve the recommendation of the grant of an easement to the City of the Golden. Pursuant to the Board of Trustees Capital Construction and Real Estate Conveyance Policy, Section 2.1, the Board of Trustees is asked to consider and approve granting the utility easement to the City of Golden, and authorizes Mines to execute said easement. Ms. Volpi provided a summary of the requested utility easement allowing for an extension of the utility line west of 6th Avenue that will be beneficial to both the neighboring homes and Mines Park residents. There was brief discussion regarding the rights to the ownership on the easement.

Motion to approve the grant easement of City of Golden recommendations as proposed made by Trustee Salazar; seconded by Trustee McNeil. Approved 7-0.

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines approves the granting of the utility easement described above to the City of Golden, and authorizes the President or his appropriate delegatee to execute the easement with the City of Golden.

Mines Innovation Hub program Ms. Volpi recommended that the Board of Trustees approve the Innovation Hub (the Hub) Program Plan with total project costs of \$17.50 million anticipated to be funded by the State, students and donors. She provided a summary of the program plan highlighting the opportunity the Hub offers students for experiential, hands-on learning. Dr. Johnson reported on the benefits an Innovation Hub broadly brings to Mines. Ms. Volpi reviewed a map of the location for the Hub's 30,000 square foot building. She provided a summary of anticipated funding sources and cost breakdown. There was brief discussion regarding financing and donor interest. Dr. Johnson noted he wants to see it operational by 2024. Mr. Winkelbauer provided information on donor interest and the support and momentum the Hub has already garnered. Mr. Han provided

information regarding legislative funding priorities for next year noting the Innovation Hub would be a new request and would not be competitive with the Subsurface Frontiers Building.

Motion to approve the Mines Innovation Hub program as proposed was made by Trustee Salazar; seconded by Trustee Starzer. Approved 7-0.

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines approves the Innovation Hub Program Plan with total project costs of \$17.50 million to be funded by the State, students, and donors.

Five Year Capital Plan Ms. Volpi provided an overview of the Five Year Capital Plan and recommended that the Board of Trustees approve of the Capital Construction Five Year Plan for FY 2021-2025 as proposed with total project costs of \$369.5 million. She reviewed the nine capital projects that are being considered and the anticipated sources of funding for each. Ms. Volpi noted that this approval is an annual requirement of the State of Colorado and is used for planning purposes only.

Motion to approve the Five-Year Capital Plan as proposed made by Trustee Haddon; seconded by Trustee McNeil. Approved 7-0.

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines approves the Capital Construction Five Year Plan with a total project cost of \$369.5 million.

Mines 5 year Capital Construction Plan (in millions)							State Budget Cycle				
Project Title	Total Project Cost	State Requests	General Fund	Donations	Special Financing	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25
1 Subsurface Frontiers	\$ 140.00	\$ 20.00	4.10	\$ 20.00	\$ 95.90	\$ 34.50	\$ 58.20	\$ 47.30			
2 Parking Garage II	\$ 33.00				\$ 33.00	\$ 8.90	\$ 24.10				
3 18th St Utilities	\$ 10.00				\$ 10.00	\$ 9.00	\$ 1.00				
4 Innovation Hub	\$ 17.50	\$ 8.75		\$ 8.75		\$ 1.50	\$ 12.00	\$ 4.00			
5 Early Childhood Education Center	\$ 6.00				\$ 6.00	\$ 1.20	\$ 4.80				
6 Library Renovation	\$ 13.00	\$ 10.00		\$ 3.00			\$ 2.50	\$ 10.50			
7 Residence Hall VII (400 beds)+ Dining Hall III + Recreation Center	\$ 93.00				\$ 93.00	\$ 18.60	\$ 50.00	\$ 24.40			
8 Earth Resources Innovation Hub	\$ 15.00			\$ 15.00		\$ 3.00	\$ 10.00	\$ 2.00			
9 Residence Hall (250 beds) VIII	\$ 42.00				\$ 42.00			\$ 8.40	\$ 22.40	\$ 11.20	
Total	\$ 369.50	\$ 38.75	\$ 4.10	\$ 46.75	\$ 279.90	\$ 76.70	\$ 162.60	\$ 96.60	\$ 22.40	\$ 11.20	\$ -

Fiscal Year 2020 Budget approval Ms. Volpi submitted to the Board the proposal for the Fiscal Year 2020 (FY20) Budget. The Finance and Audit Committee has reviewed the proposed budget for the Academic Year 2019-2020 and recommended to the Board that they consider and approve FY20 Budget as proposed. Ms. Volpi provided a review of the All-Funds budget revenue, revenue trends, and expenses. She provided information on unrestricted operating revenue, enrollment and admissions yield rates. She also provided an overview of the proposed tuition rates noting that the university will follow the Governor's requirement to keep resident tuition flat. Mandatory and new fees were reviewed along with expense increases in all areas. Ms. Volpi reported on the higher education landscape, the cost of education and return on investment.

Pursuant to authority conferred by §23-41-104(1), C.R.S. (2012) and as required by §23-5-119.5(1), C.R.S. (2012), the Board of Trustees has the responsibility and authority for the financial management of the School, including the setting of tuition and fees and the approval of the budget.

The Finance and Audit Committee has reviewed the proposed budget for the Academic Year 2019-2020 and recommends to the Board of Trustees the Fiscal Year 2020 Budget.

Motion to approve revisions to the Fiscal Year 2020 Budget as proposed made by Trustee Haddon; seconded by Trustee Salazar. Approved 7-0.

BE IT RESOLVED that the Board of Trustees approves the Fiscal Year 2020 Budget consisting of:

- Total revenue of \$336.74 million;
- Total expenses of \$324.31 million plus addition of reserves of \$4.30 million;
- 0.0% increase for resident and 3.0% increase for non-resident residential undergraduate and graduate tuition rates; 0.0% increase for online tuition rates;
- 0.0% increase for faculty-led study abroad tuition rates
- Increases to Room and Board rates; and
- Increases in fees and charges, plus seven new program fees and two new administrative fees.

Subsurface Frontier financing recommendations Ms. Volpi provided an overview of the building project costs and the anticipated financing needs, noting there has been no change to the project costs since the last meeting. She provided a review of the financing options for this project and, then presented the administration's recommended financing plan and estimated debt service for the project. She reviewed the estimated impact on debt service and the plan for monitoring and mitigating risks. Ms. Volpi reported on the next steps and the financing timeline, and reviewed refunding opportunities. Ms. Volpi noted that the administration will come back to the Board for any action outside of the recommended commercial paper and variable rate demand bond structure. Mr. Han reviewed the State funding timeline noting that we are able to access phase one (\$1.8M) of the two-year State request; year two funding (\$18.2M) will be included in the State's capital request list as a continuing project, and as such, is considered a top priority. Ms. Volpi noted that Congressman Perlmutter continues his support for garnering Federal funding, and Mr. Winkelbauer reviewed donor possibilities. Ms. Volpi will give the Board an update on the financing prior to going to market, if Mines is ready to do so by the next Board meeting.

Ms. Volpi also noted that there are two bond issues that if refunded, would garner present value savings. Total amount of projected bonds to be refunded is \$17.5M.

Motion to approve the recommendation of the Subsurface Frontier financing recommendations as proposed made by Trustee Haddon; seconded by Trustee McNeil. Approved 7-0.

BE IT RESOLVED that the Finance and Audit Committee recommends that the Board of Trustees approves the financing of the Subsurface Frontiers Research Building and related projects with up to \$180.0M in Commercial Paper Notes and Variable Rate Demand Bonds in a proportion that will depend on market conditions at the time of issuance, with the most cost advantaged solution prevailing. Issuance limits are shown in the table below.

	Initial Financing	Permanent Financing
Variable Rate Demand Bonds	Up to \$50.0M	Up to \$50.0M
Commercial Paper	Up to \$180.0M	
Fixed Rate Bonds		Up to \$180.0M
Total	Up to \$180.0M	Up to \$180.0M

Furthermore, the Finance and Audit Committee recommends that the Board of Trustees approves the issuance of up to \$17.5M in taxable and tax-exempt fixed rate bonds to advance refund certain maturities of the Series 2010B Taxable Direct Payment Build America Bonds and the Series 2012B Tax-Exempt Bonds provided that the present

value savings is 2% or greater at the time of issuance.

As such, the Board of Trustees approves the Eighteenth Supplemental Resolution (Attachment 1).

The full text of the Eighteenth Supplemental Resolution is located at Attachment 1. A brief summary of the salient terms is included below:

Summary of Eighteenth Supplemental Resolution

The Eighteenth Supplemental Resolution authorizes the (a) financing the construction and equipping of the Subsurface Frontiers Building and related campus improvements, including but not limited to, parking, utilities, and infrastructure related thereto (collectively, the "Series 2019 Project"); (b) funding capitalized interest, if any; (c) refunding certain to be determined outstanding Prior Obligations or Parity Obligations from time to time (the "Refunding Project"); (d) paying costs of issuance; (e) financing any other campus improvements for which the Board has spending authority; and (f) financing such other campus projects as may be designated by the Board. The Series 2019 Bonds may be issued in one or more series by the Board as taxable or tax-exempt Commercial Paper Notes, Capital Appreciation Bonds, Credit Enhanced Bonds or as obligations that bear interest at a fixed, variable, adjustable, convertible or similar rate not in excess of the Maximum Interest Rate (18%). The Series 2019 Bonds may mature as term bonds or serial bonds, or both, and not later than December 1, 2059.

The Commercial Paper Notes shall be issued to fund the Series 2019 Project in the maximum aggregate principal amount of not to exceed \$180.0M outstanding at any time. The Series 2019 Bonds (excluding the Commercial Paper Notes) shall be issued to fund the Series 2019 Project in the maximum aggregate principal amount of not to exceed \$50.0M. The Series 2019 Bonds may also be issued to fund the Refunding Project in the maximum aggregate principal amount of not to exceed \$197.5M.

With respect to the Refunding Project, the Board may by subsequent action renew and re-adopt the Eighteenth Supplemental Resolution on an annual basis by amending and/or extending the effective date.

In connection with the Commercial Paper Notes and the Series 2019 Bonds, and the Series 2019 Project and the Refunding Project, the Board will comply with the provisions of the Board's Debt Management Policy (April 2019), as amended from time to time.

Indemnification approval Ms. Volpi provided an overview of the indemnification provision included in the proposed LinkedIn Subscription Agreement. Pursuant to C.R.S. § 23-5-106, the Board of Trustees is asked to consider and approve whether the LinkedIn Agreement serves a valid public purpose and whether the risks of agreeing to the indemnification are sufficiently limited and outweighed by the benefits of the Agreement, such that the University is authorized to execute the Agreement on behalf of the Board.

Motion to approve the LinkedIn Agreement as proposed made by Trustee Burgess; seconded by Trustee Salazar. Approved 7-0.

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines approves the indemnification language in the LinkedIn Agreement, and authorizes the President or his appropriate delegate to execute this Agreement.

Approval of the President's new appointment agreement and FY2020 compensation Ms. Walker and Chairman Jorden recommended the Board consider and approve the proposed extension of President Johnson's appointment and FY 2020 compensation increase, extending President Johnson's appointment through June 30, 2024, and providing for a new annual salary of \$471,397, commencing on July 1, 2019.

Motion to approve the new appointment agreement and FY2020 compensation for President Johnson as proposed made by Trustee Haddon; seconded by Trustee Sanders. Approved 7-0.

BE IT RESOLVED that:

- (a) the Board of Trustees of the Colorado School of Mines has determined that an extension of Dr. Paul Johnson's appointment as Mines President through June 30, 2024, is necessary for the retention of this valued employee in light of prevailing market conditions and competitive employment practices in other states, and, therefore, approves of this extension of Dr. Johnson's appointment; and*
- (b) the Board approves of a 3% increase in Dr. Johnson's annual salary, increasing it to \$471,397, commencing on July 1, 2019.*

Trustee Lunch – *the Trustees broke for lunch at noon and continued the regular meeting*

d. Regular Written Reports

Tom Boyd thanked Heather Boyd, introduced Lori Kester and Tim Myskew.

Undergraduate Admissions Ms. Boyd provided a brief update to the report, noting Mines is expecting 1208-1230 entering new students this fall, with 45 more women than last year's freshman class. She reported there is a 100% increase in international students, noting shifts in general diversity. She reported that Mines is expecting 67 Colorado student scholars this year, which is historically the School's highest group.

Graduate Admissions Dr. Zhou reviewed her report and noted a 41% increase in enrollment compared to the same time last year. She reported the new programs have contributed about 10% of the enrollment increase. She reviewed reasons for the increase and discussed how to continue this positive enrollment trend.

Research activities and tech transfer report Dr. Tompkins provided a brief update noting that the Advanced Industries Grant Team for the State of Colorado awarded Dr. Owen Hildreth the Proof of Concept award of a \$105k grant.

Capital Project update No updates.

Safety report No updates.

CSM Foundation and Alumni Relations report Mr. Winkelbauer provided an update on gifts received. He reported the Houston Golf Tourney netted \$70k for scholarships. He reviewed a couple of upcoming events and noted the Month for Mines (May) event with a focus on the Mines Fund has a challenge match from donors. He noted the structure of the Annual Fund and Mines Fund are being evaluated.

III. Executive Session

12:35 p.m. Motion to move into executive session made by Trustee McNeil; seconded by Trustee Burgess. Approved 7-0.

To discuss legal advice pursuant to §24-6-402 (3)(a)(II), C.R.S.; and property purchase pursuant to § 24-6-402(3)(a)(I).

Trustees present: Chairman Jorden, Trustee's Haddon, McNeil, Salazar, Sanders, Starzer and Burgess.

Mines executives and directors present: President Johnson, Interim Provost Boyd, EVP Volpi, VPSL Fox, VP Tompkins, VP Han. VPGC Walker and Mr. Winkelbauer.

12:45 p.m. Motion to move into regular session made by Trustee Salazar; seconded by Trustee McNeil. Approved 7-0.

Action Items (continued)

Approval of Mines' anticipated property acquisition Ms. Volpi provided information on and recommended that the Board approve the transfer to Mines of up to four Golden properties, should these be purchased by the CSM Foundation. She provided an overview of the four properties, their potential utility to Mines, and the possible price range and appraisal values.

Motion to approve Mines' anticipated property acquisition as proposed made by Trustee Burgess; seconded by Trustee Salazar. Approved 7-0.

BE IT RESOLVED that the Board of Trustees of the Colorado School of Mines approves the transfer of the following properties to Mines, should these be purchased by the CSM Foundation:

- 1704 Illinois Street
- 1701 Washington Avenue
- 721 16th Street
- 812 16th Street

12:50 p.m. Motion to adjourn by Trustee Haddon; seconded by Trustee McNeil. Approved 7-0

There being no further business, the regular meeting adjourned.



A handwritten signature in blue ink, appearing to read 'Anne Stark Walker', is written over a horizontal line.

Anne Stark Walker, Secretary

**CERTIFIED RECORD
OF
PROCEEDINGS OF
THE BOARD OF TRUSTEES
OF
THE COLORADO SCHOOL OF MINES
JEFFERSON COUNTY, COLORADO**

**RELATING TO AN EIGHTEENTH SUPPLEMENTAL RESOLUTION AUTHORIZING
THE ISSUANCE AND REISSUANCE FROM TIME TO TIME OF THE FOLLOWING
OBLIGATIONS PURSUANT TO THE MASTER ENTERPRISE BOND RESOLUTION**

The Board of Trustees of the Colorado School of Mines
Institutional Enterprise Revenue
Commercial Paper Notes
Variable Rate Demand Bonds
Fixed Rate Bonds
Refunding Bonds

*This cover page is not a part of the following Eighteenth Supplemental Resolution and is
included solely for the convenience of the reader.*

Table of Contents

Page

ARTICLE I DEFINITIONS; INTERPRETATIONS

Section 1.01.	The Purpose of This Eighteenth Supplemental Resolution	4
Section 1.02.	Definitions.....	4
Section 1.03.	Article and Section References	10
Section 1.04.	Construction.....	10
Section 1.05.	Successors	10
Section 1.06.	Parties Interested Herein	10
Section 1.07.	Ratification.....	10
Section 1.08.	Resolution Irrepealable	11
Section 1.09.	Repealer	11
Section 1.10.	Severability	11
Section 1.11.	Effective Date	11

ARTICLE II AUTHORIZATION OF SERIES 2019 REFUNDING PROJECT AND CERTAIN RELATED DOCUMENTS

Section 2.01.	Authority for Resolution	11
Section 2.02.	Necessity of the Series 2019 Project, the Refunding Project, the Commercial Paper Notes and Series 2019 Bonds.....	11
Section 2.03.	Authorization of the Series 2019 Project and the Refunding Project	11
Section 2.04.	Provision for Sale of Commercial Paper Notes and Series 2019 Bonds	12
Section 2.05.	Approval and Use of Preliminary Official Statement and Official Statement; Rule 15c2-12; Continuing Disclosure Undertaking.....	12
Section 2.06.	Execution of Documents.....	12

ARTICLE III AUTHORIZATION AND TERMS OF SERIES 2019 BONDS

Section 3.01.	Authorization and Designation of Series 2019 Bonds; Principal Amount	13
Section 3.02.	Purposes	13
Section 3.03.	General Terms.....	13
Section 3.04.	Principal Amounts; Maturities; Interest Rates	13
Section 3.05.	Payment of Bond Requirements	15
Section 3.06.	Book-Entry System.....	16
Section 3.07.	Transfers Outside Book-Entry System	18
Section 3.08.	Bond Register.....	19

Table of Contents
(continued)

Page

ARTICLE IV
REDEMPTION

Section 4.01.	Optional Redemption	19
Section 4.02.	Mandatory Sinking Fund Redemption.....	19
Section 4.03.	Selection for Redemption	19
Section 4.04.	Redemption Procedures	19
Section 4.05.	Notice of Redemption	20
Section 4.06.	Tender and Purchase	20

ARTICLE V
ESTABLISHMENT OF FUNDS AND APPLICATION OF SERIES 2019 PROCEEDS

Section 5.01.	Establishment of Funds and Accounts	20
Section 5.02.	Application of Proceeds	21
Section 5.03.	Debt Service Fund.....	21
Section 5.04.	Series 2019 Expense Account.....	22
Section 5.05.	Application of Series 2019 Project Account.....	22
Section 5.06.	Series 2019 Underwriter Not Responsible.....	22

ARTICLE VI
TAX COVENANTS

Section 6.01.	Series 2019 Rebate Account	23
Section 6.02.	Preservation of Tax Exemption	23

ARTICLE VII

ADDITIONAL EVENTS OF DEFAULT	24
------------------------------------	----

ARTICLE VIII
MISCELLANEOUS

Section 8.01.	Notices	24
Section 8.02.	Notices to Rating Agencies.....	25
Section 8.03.	Modification of Master Resolution and this Eighteenth Supplemental Resolution	26
Section 8.04.	Applicability of Master Resolution.....	26
Section 8.05.	Approval, Authorization and Ratification of Certain Documents	26
Section 8.06.	Authorization of Officers	27
Section 8.07.	Payments or Actions Occurring on Non-Business Days	27
Section 8.08.	Governing Law	27

Table of Contents
(continued)

Page

Section 8.09.	Counterparts	27
---------------	--------------------	----

EIGHTEENTH SUPPLEMENTAL RESOLUTION

WHEREAS, pursuant to the provisions of Sections 23-41-101 *et seq.* Colorado Revised Statutes, as amended (the “Establishing Act”), the Board of Trustees of the Colorado School of Mines (the “Board”) is a body corporate under the laws of the State of Colorado (the “State”), is the governing authority for the Colorado School of Mines (the “School of Mines”) and has general supervision of the School of Mines and the control and direction of the funds and appropriations made thereto; and

WHEREAS, the Board adopted on August 24, 2007 a Master Enterprise Bond Resolution (the “Master Resolution”), as previously amended and supplemented as set forth below; and

WHEREAS, this Eighteenth Supplemental Resolution (the “Eighteenth Supplemental Resolution”) is proposed for adoption pursuant to and in accordance with the Master Resolution; and

WHEREAS, any capitalized term used herein and not defined herein shall have the same meaning ascribed thereto in the Master Resolution unless the context shall clearly otherwise require; and

WHEREAS, pursuant to Sections 23-5-101.5, 23-5-102, 23-5-103, 23-5-104 and 23-5-105, Colorado Revised Statutes, as amended (the “Auxiliary Facilities Enterprise Act”), the Board has previously designated certain self-supporting auxiliary facilities and operations (the “Facilities”) of the School of Mines as an enterprise, which designation remains effective as of the date hereof; and

WHEREAS, the Board has previously issued certain Prior Auxiliary Bonds consisting of the Auxiliary Facilities Enterprise Revenue Capital Appreciation Bonds, Series 1999 (the “Series 1999 Bonds”) outstanding as of June 30, 2018 in the aggregate principal amount of \$10,027,000. The Series 1999 Bonds are Prior Obligations under the Master Resolution and are payable solely from revenues of the Facilities with a lien on the Net Revenues superior to the lien Parity Obligations and Subordinate Lien Obligations (each as defined below); and

WHEREAS, pursuant to and in accordance with the provisions of Colorado Revised Statutes Sections 23-5-101.7, 23-5-102, 23-5-103, 23-5-104 and 23-5-105 (collectively, the “Institutional Enterprise Statute”), the Board has designated the School of Mines as an enterprise for purposes of Article X, Section 20 of the Colorado Constitution (the “Institutional Enterprise”), which designation has been approved by the Legislative Audit Committee of the State General Assembly and is effective as of the date hereof; and

WHEREAS, in accordance with the provisions of the Institutional Enterprise Statute, the Board is authorized to issue, from time to time, revenue bonds on behalf of the Institutional Enterprise to finance and refinance the construction, other acquisition, equipping and operation of facilities for the School of Mines, including but not limited to, academic, administrative and other facilities determined by the Board to be necessary or desirable for the operation of the School of Mines, as well as facilities previously financed or refinanced with revenues from the Auxiliary Facilities Enterprise (defined in the Master Resolution); and

WHEREAS, the Board has previously issued certain outstanding Bonds as Parity Obligations under the Master Resolution, including as of June 30, 2018 the following: (i) its Institutional Enterprise Refunding and Improvement Revenue Bonds, Series 2009A, which are currently outstanding in the aggregate principal amount of \$1,130,000 (the “Series 2009A Bonds”); (ii) its Taxable Institutional Enterprise Revenue Bonds (Build America Bonds – Direct Payment to the Board), Series 2009B which are currently outstanding in the aggregate principal amount of \$42,860,000 (the “Series 2009B Bonds”); (iii) its Institutional Enterprise Revenue Refunding Bonds, Series 2009C, which are currently outstanding in the aggregate principal amount of \$1,260,000 (the “Series 2009C Bonds,” and together with the Series 2009A Bonds and Series 2009B Bonds, the “Series 2009 Bonds”); (iv) its Institutional Enterprise Revenue Bonds (Taxable Direct Payment Build America Bonds), Series 2010B which are currently outstanding in the aggregate principal amount of \$11,195,000 (the “Series 2010 Bonds”); (v) its Institutional Enterprise Revenue Bond (Taxable Qualified Energy Conservation Bond), Series 2011 which is currently outstanding in the aggregate principal amount of \$1,055,000 (the “Series 2011 Bond”); (vi) its Institutional Enterprise Revenue Bonds, Series 2012B outstanding in the aggregate principal amount of \$7,790,000 (the “Series 2012B Bonds”); (vii) its Institutional Enterprise Revenue and Refunding Bonds, Series 2016 (the “Series 2016 Bonds”) which are currently outstanding in the aggregate principal amount of \$30,075,000; (viii) its Institutional Enterprise Revenue Bonds, Series 2017A (the “Series 2017A Bonds”) which are currently outstanding in the aggregate principal amount of \$27,675,000; (ix) its Institutional Enterprise Revenue Bonds, Series 2017B (the “Series 2017B Bonds”) which are currently outstanding in the aggregate principal amount of \$71,880,000; (x) its Institutional Enterprise Revenue Bonds, Series 2017C (the “Series 2017C Bonds”) which are currently outstanding in the aggregate principal amount of \$35,030,000; and (xi) its Institutional Enterprise Revenue Refunding Bonds, Series 2018A (the “Series 2018A Bonds”) which are currently outstanding in the aggregate principal amount of \$37,885,000. The Series 2009 Bonds, Series 2010 Bonds, Series 2011 Bond, Series 2012B Bonds, Series 2016 Bonds, Series 2017A Bonds, Series 2017B Bonds, Series 2017C Bonds, Series 2018A Bonds and any additional bonds payable from the Net Revenues and secured with a lien thereon on a parity therewith, including the hereinafter defined Series 2019 Bonds authorized and described herein, are referred to herein singularly and collectively as the “Parity Obligations”; and

WHEREAS, the Board has previously issued certain Bonds as Subordinate Lien Obligations under the Master Resolution, including its Subordinate Institutional Enterprise Revenue Bond (Stadium Loan Project), Series 2012A (the “Series 2012A Bond”) which, as of June 30, 2018, is currently outstanding in the aggregate principal amount of \$8,300,000 with a lien on the Net Revenues that is subordinate to the Parity Obligations and the Prior Obligations; and

WHEREAS, the Board has determined to authorize pursuant to the Master Resolution and hereby the issuance from time to time of its Bonds, which Bonds, may be issued pursuant to the Master Resolution and hereby as Commercial Paper Notes, Capital Appreciation Bonds, Credit Enhanced Bonds or Bonds issued to bear interest at a fixed, variable, adjustable, convertible or similar rate (such Commercial Paper Notes and Bonds singularly and collectively referred to herein as the “Series 2019 Bonds”) for the purpose of (a) financing the construction and equipping of the Subsurface Frontiers Building and related campus improvements, including but not limited to, parking, utilities and infrastructure related thereto (collectively, the “Series

2019 Project”); (b) funding capitalized interest, if any; (c) refunding certain to be determined outstanding Prior Obligations or Parity Obligations from time to time (the “Refunding Project”); (d) paying costs of issuance; (e) financing any other campus improvements for which the Board has spending authority; and (f) financing such other campus projects as may be designated by the Board, in accordance with and as provided by the Master Resolution and this Eighteenth Supplemental Resolution; and

WHEREAS, the Board shall notify the Colorado Commission on Higher Education of the State of the issuance of the Series 2019 Bonds authorized hereby; and

WHEREAS, the State Intercept Program may apply to certain Series 2019 Bonds authorized hereby; and

WHEREAS, the Board hereby intends to sell the Series 2019 Bonds authorized hereby through negotiated sales pursuant to the terms of a Bond Purchase Agreement, a Dealer Agreement and Pricing Certificates to be dated no later than the date of issuance of the Series 2019 Bonds authorized hereby, by and between the Board and the Series 2019 Underwriter or the Dealer (the “Bond Purchase Agreement,” the “Dealer Agreement” and the “Pricing Certificate,” respectively); and

WHEREAS, Article 56 of Title 11, Colorado Revised Statutes, as amended, cited as the Public Securities Refunding Act (the “Refunding Act”), authorizes the Board to issue bonds for the Refunding Project for the purpose of reducing the principal and interest payable in particular years, of postponing the maturity of such obligations to a later date, of effecting economies, of modifying and eliminating restrictive contractual limitations, or any combination thereof; and

WHEREAS, the Board has determined and hereby declares that:

(a) The issuance by the Board of the Series 2019 Bonds authorized hereby to (a) finance the Series 2019 Project and the Refunding Project; (b) fund capitalized interest, if any; and (c) pay certain costs relating to the issuance of the Series 2019 Bonds authorized hereby is determined to be necessary and desirable for the operation of the School of Mines and is in the best interests of the Board and the School of Mines;

(b) Each of the requirements imposed by the Institutional Enterprise Statute and the Refunding Act upon the issuance of bonds hereunder have been met;

(c) The Board elects to have all provisions of Section 11-57-201, et seq., Colorado Revised Statutes, as amended (the “Supplemental Public Securities Act”), apply to the issuance of the Series 2019 Bonds authorized hereby; provided, however, that such election shall not operate to modify or limit the rights conferred on the Board by any other provisions of Colorado law; and

(d) Pursuant to the Supplemental Public Securities Act, the certificates evidencing the Series 2019 Bonds authorized hereby shall contain a recital that the Series 2019 Bonds authorized hereby are issued pursuant to the Supplemental Public Securities Act. Such recital shall be conclusive evidence of the validity and the regularity of the issuance of the Series 2019 Bonds authorized hereby after their delivery for value;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE COLORADO SCHOOL OF MINES:

ARTICLE I

DEFINITIONS; INTERPRETATIONS

Section 1.01. The Purpose of This Eighteenth Supplemental Resolution. This Eighteenth Supplemental Resolution is adopted by the Board for the purpose of amending and supplementing certain provisions of the Master Resolution, as such resolution has been amended and supplemented to date, in connection with the issuance of the Series 2019 Bonds authorized hereby as Additional Bonds under the provisions of the Master Resolution. Except as amended and supplemented by this Eighteenth Supplemental Resolution, the Master Resolution remains in full force and effect, and is hereby ratified and confirmed by the Board. The Master Resolution, as amended and supplemented by this Eighteenth Supplemental Resolution, and as further amended and supplemented by any subsequent resolution of the Board, adopted in accordance with the requirements thereof, is hereafter referred to as the “Bond Resolution.”

Section 1.02. Definitions. Except as provided below in this Section, all terms which are defined in Section 1.01 of the Master Resolution shall have the same meanings, respectively, in this Eighteenth Supplemental Resolution as such terms are given in the Master Resolution. In addition to the terms which are defined in the recitals of this Eighteenth Supplemental Resolution, the following terms shall have the following respective meanings:

“*Authorized Denominations*” means, unless as otherwise provided in the Pricing Certificate or the Issuing and Paying Agent Agreement, with respect to the Series 2019 Bonds, \$5,000 in principal amount or any integral multiple thereof, and with respect to the Commercial Paper Notes, \$100,000 and integral multiples of \$1,000 in excess thereof.

“*Bank*” means any provider of a Liquidity Facility or a Credit Agreement in support of the Commercial Paper Notes.

“*Beneficial Owner*” means any Person which (a) has the power, directly or indirectly, to vote or consent with respect to, or to dispose of ownership of, any of the Series 2019 Bonds authorized hereby (including any Person holding a Series 2019 Bond authorized hereby through nominees, depositories or other intermediaries); or (b) is treated as the owner of any Series 2019 Bond authorized hereby for federal income tax purposes.

“*Board Representative*” means the Executive Vice President and Treasurer of the School of Mines or any other officer or employee of the School of Mines that is designated to act as the Board Representative under the Bond Resolution by the Board or by the Executive Vice President and Treasurer of the Board.

“*Bond Register*” means the book or books of registration kept by the Series 2019 Paying Agent in which are maintained the names and addresses and principal amounts registered to each Registered Owner.

“Bond Year” means a “Bond Year” as defined in the Tax Certificate.

“Book-Entry Bonds” means the Institutional Enterprise Revenue held by DTC (or its nominee) as the registered owner thereof pursuant to the terms and provisions of Section 3.06 hereof.

“Cede & Co.” means Cede & Co., the nominee of DTC, and any successor nominee of DTC with respect to the Series 2019 Bonds authorized hereby.

“Closing Date” means the date of delivery of the Series 2019 Bonds authorized hereby to the Series 2019 Underwriter against payment therefor pursuant to the Bond Purchase Agreement or the Dealer Agreement.

“Commercial Paper Credit Agreement Account” means such account created under the Issuing and Paying Agent Agreement, including any accounts and subaccounts therein.

“Commercial Paper Expense Account” means such account created under the Issuing and Paying Agent Agreement, including any accounts and subaccounts therein.

“Commercial Paper Note(s)” or *“CP Note(s)”* means a commercial paper note, and any subseries thereof, in one of the forms attached to the Issuing and Paying Agent Agreement, and designated as the “Board of Trustees of the Colorado School of Mines, Institutional Enterprise Revenue Commercial Paper Notes.”

“Commercial Paper Proceeds Account” means such account created under the Issuing and Paying Agent Agreement, including any accounts and subaccounts therein.

“Commercial Paper Project Account” means such account created under the Issuing and Paying Agent Agreement, including any accounts and subaccounts therein.

“Continuing Disclosure Undertaking” means the Continuing Disclosure Undertaking of the Board with respect to the Series 2019 Bonds authorized hereby pursuant to Section 2.07 hereof.

“Costs of Issuance” means all costs and expenses incurred by the Board in connection with the issuance of the Series 2019 Bonds authorized hereby, including, but not limited to, costs and expenses of printing and copying documents, any offering document, the Series 2019 Bonds, the Commercial Paper Notes, bond insurance premium, if any, underwriter’s compensation, and the fees, costs and expenses of Rating Agencies, the Municipal Advisor, the Dealer, the Bank, the Credit Agreement Provider, the Series 2019 Paying Agent, the Issuing and Paying Agent, the Escrow Agent, counsel, accountants, feasibility consultants and other consultants.

“Counsel” means an attorney or a firm of attorneys admitted to practice law in the highest court of any state in the United States of America or in the District of Columbia.

“Credit Agreement” means any Credit Facility (as defined in the Master Resolution) supporting payment of principal of and interest on the Series 2019 Bonds authorized hereby;

provided, however, that the Credit Agreement may refer to multiple contracts in the event the Series 2019 Bonds authorized hereby are issued in more than one series.

“Credit Agreement Provider” means any provider of a Credit Agreement, which Credit Provider shall be designated in the Pricing Certificate or the Issuing and Paying Agent Agreement; provided, however, that the Credit Agreement Provider may refer to multiple entities in the event the Series 2019 Bonds authorized hereby are issued in more than one series.

“Dealer” means one or more financial institutions selected and approved by the Board as a commercial paper dealer for the Commercial Paper Notes under the terms of a Dealer Agreement, the selection of which shall be set forth in the Issuing and Paying Agent Agreement. The initial Dealer will be Morgan Stanley & Co. LLC.

“Dealer Agreement” means any Commercial Paper Dealer Agreement relating to the Commercial Paper Notes between the Board and the Dealer; provided, however, that the Dealer Agreement may refer to multiple contracts in the event the Commercial Paper Notes are issued in more than one series.

“DTC” means The Depository Trust Company, a limited-purpose trust company organized under the laws of the State of New York, and its successors and assigns.

“Eighteenth Supplemental Resolution” means this Eighteenth Supplemental Resolution, adopted by the Board on May 20, 2019, and which sets forth the terms of the Series 2019 Bonds authorized hereby.

“Escrow Account” means the escrow account established by the Escrow Agreement.

“Escrow Agent” means Wells Fargo Bank, National Association, Denver, Colorado, and its successors and assigns.

“Escrow Agreement” means, if necessary, that certain Escrow Deposit Agreement, dated as of the dated date of the Series 2019 Bonds, by and between the Escrow Agent and the Board.

“Favorable Opinion of Bond Counsel” means, with respect to any action relating to the Series 2019 Bonds authorized hereby, the occurrence of which requires such an opinion, an unqualified written legal opinion of Bond Counsel to the effect that such action is permitted under this Eighteenth Supplemental Resolution and the Master Resolution and will not impair the exclusion of interest on the Series 2019 Bonds authorized hereby from gross income for purposes of federal income taxation (subject to the inclusion of any exception contained in the opinion delivered upon the original issuance of such Series 2019 Bonds authorized hereby).

“Holder,” “Bondholder” or “Owner” means the registered owner of any Series 2019 Bond authorized hereby including DTC or its nominee as the sole registered owner of Book-Entry Bonds.

“Interest Payment Date” shall have the meaning set forth in the Pricing Certificate and the Issuing and Paying Agent Agreement.

“Issue Date” means the date or dates on which the Series 2019 Bonds authorized hereby are first delivered to the initial purchasers thereof against payment therefor.

“Issuing and Paying Agent” means one or more financial institutions selected and approved by the Board as Issuing and Paying Agent for the Commercial Paper Notes under the terms of an Issuing and Paying Agent Agreement, the selection of which shall be set forth in the Issuing and Paying Agent Agreement.

“Issuing and Paying Agent Agreement” means the Issuing and Paying Agent Agreement relating to the Commercial Paper Notes, including any supplements thereto; provided, however, that the Issuing and Paying Agent Agreement may refer to multiple Issuing and Paying Agent Agreements in the event the Commercial Paper Notes are issued in more than one series.

“Liquidity Facility” means any reimbursement agreement, credit agreement, line of credit agreement, standby purchase agreement or other agreement pursuant to which a Bank is required to pay, or to provide funds for the payment of, the principal of or interest on the Series 2019 Bonds authorized hereby, including any supplements thereto; provided, however, that Liquidity Facility may refer to multiple Liquidity Facilities in the event the Series 2019 Bonds authorized hereby are issued in more than one series.

“Mail” means by first-class United States Postal Service mail, postage prepaid.

“Master Resolution” means the Master Resolution adopted by the Board on August 24, 2007.

“Maximum Interest Rate” means the lesser of (a) the rate of 18% per annum calculated in the same manner as interest is calculated for the particular interest rate on the Series 2019 Bonds authorized hereby and (b) the Maximum Lawful Rate.

“Maximum Lawful Rate” means the maximum rate of interest on the relevant obligation permitted by applicable law.

“Municipal Advisor” means North Slope Capital Advisors.

“Nominee” means the nominee of the Securities Depository, which may be the Securities Depository, as determined from time to time pursuant hereto.

“Notice Parties” means the Board, the Dealer, any Bank, the Series 2019 Underwriter, any Credit Agreement Provider and the Series 2019 Paying Agent.

“Official Statement” or *“Offering Memorandum”* means any final Official Statement or Offering Memorandum prepared by the Board relating to the Series 2019 Bonds authorized hereby.

“Opinion of Tax Counsel” means an opinion of counsel, acceptable to the Board, nationally recognized for its experience in matters relating to the tax exemption of interest on obligations issued by states and their political subdivisions.

“*Order*” means the Order Authorizing the Issuance of the Commercial Paper Notes to be executed by the Board prior to the issuance of the Commercial Paper Notes.

“*Participant*” means those broker-dealers, banks and other financial institutions for which the Securities Depository holds certificates as securities depository.

“*Paying Agent Agreement*” means any Paying Agent Agreement, dated as of the date of the Series 2019 Bonds, by and between the Series 2019 Paying Agent and the Board.

“*Payment Date*” means each Interest Payment Date or any other date on which any principal of, premium, if any, purchase price, or interest on any Series 2019 Bond authorized hereby is due and payable for any reason, including without limitation upon any redemption effectuated pursuant to Section 4.01.

“*Person*” means a corporation, association, partnership, limited liability company, joint venture, trust, organization, business, individual or government or any governmental agency or political subdivision thereof.

“*Preliminary Official Statement*” means any Preliminary Official Statement relating to the Series 2019 Bonds.

“*Pricing Certificate*” means a certificate with respect to the Series 2019 Bonds authorized hereby executed by the Board Representative and evidencing the determinations made pursuant to Section 3.04(b) of this Eighteenth Supplemental Resolution; provided, however, that the Pricing Certificate may refer to multiple certificates, in the event the Series 2019 Bonds authorized hereby are issued in more than one series, and provided further that the provisions of any Pricing Certificate shall be deemed to be incorporated into this Eighteenth Supplemental Resolution.

“*Pricing Date*” means the date or dates of execution of the Bond Purchase Agreement relating to the Series 2019 Bonds authorized hereby.

“*Rating Confirmation*” means written confirmation from each Rating Agency that the proposed action or event will not in and of itself result in a reduction or withdrawal in such Rating Agency’s current rating on the Series 2019 Bonds authorized hereby.

“*Redemption Date*” means the date fixed for an optional redemption prior to maturity of any Series 2019 Bond authorized hereby.

“*Redemption Price*” means, with respect to any Series 2019 Bond authorized hereby or portion thereof, a price equal to the principal amount of any Series 2019 Bond authorized hereby, or portion thereof, plus the interest accrued to the applicable Redemption Date, plus premium, if applicable.

“*Registered Owner*” means a Person in whose name a Series 2019 Bond authorized hereby is registered in the Bond Register.

“*Registrar*” for purposes of this Eighteenth Supplemental Resolution, means the Series 2019 Paying Agent.

“*Regular Record Date*” means the close of business on the fifteenth day (whether or not a Business Day) of the calendar month next preceding each regularly scheduled Interest Payment Date for the Series 2019 Bonds.

“*Representation Letter*” means the Blanket Issuer Letter of Representations from the Board to DTC currently in effect.

“*Resolution*” means the Master Resolution as previously amended and supplemented and as further supplemented by this Eighteenth Supplemental Resolution.

“*Series 2019 Expense Account*” means the account or accounts of such designations created in Section 5.01 of this Eighteenth Supplemental Resolution and into which money is to be deposited to pay Costs of Issuance of the Series 2019 Bonds authorized hereby.

“*Series 2019 Interest Account*” means the account or accounts of such designations created in Section 5.01 of this Eighteenth Supplemental Resolution within the Debt Service Fund and into which money is to be deposited to pay interest on the Series 2019 Bonds authorized hereby.

“*Series 2019 Paying Agent*” means Wells Fargo Bank, National Association, Denver, Colorado, acting as agent of the Board for the payment of the principal of, premium, if any, and interest on the Series 2019 Bonds authorized hereby, and any successor thereto.

“*Series 2019 Principal Account*” means the account or accounts of such designations created in Section 5.01 of this Eighteenth Supplemental Resolution within the Debt Service Fund and into which money is to be deposited to pay principal on the Series 2019 Bonds authorized hereby.

“*Series 2019 Project Account*” means the account or accounts of such designations created in Section 5.01 of the Eighteenth Supplemental Resolution and into which money is to be deposited to fund the Series 2019 Project.

“*Series 2019 Rebate Account*” means the account or accounts of such designations created in Section 6.01 of this Eighteenth Supplemental Resolution.

“*Series 2019 Underwriter*” means Morgan Stanley & Co. LLC.

“*State*” means the State of Colorado.

“*State Intercept Act*” means Section 23-5-139, Colorado Revised Statutes, as amended.

“*State Intercept Program*” means the Higher Education Revenue Bond Intercept Program, established pursuant the State Intercept Act.

“Taxable Obligation” means any Series 2019 Bonds authorized hereby the interest on which is not excludable from gross income of the holder thereof for federal income tax purposes, which, with respect to the Series 2019 Bonds authorized hereby, shall be determined by the Board Representative, in accordance with the Article VII hereof titled “FEDERAL TAX LAW MATTERS” and set forth in the Pricing Certificate.

“Tax Certificate” means the Tax Compliance Certificate relating to the Series 2019 Bonds authorized hereby, executed by the Board on the date of issuance of the Series 2019 Bonds authorized hereby; provided, however, that the Tax Certificate may refer to multiple tax compliance certificates executed in connection with the Series 2019 Bonds authorized hereby.

“Tax Exempt Obligation” means any Series 2019 Bonds authorized hereby the interest on which is excludable from gross income of the holder thereof for federal income tax purposes, which, with respect to the Series 2019 Bonds authorized hereby, shall be determined by the Board Representative, in accordance with Article VII hereof title “FEDERAL TAX LAW MATTERS” and set forth in the Pricing Certificate.

“Transaction Documents” means this Eighteenth Supplemental Resolution, the Bond Purchase Agreement, the Dealer Agreement, the Issuing and Paying Agent Agreement, the Order, the Paying Agent Agreement, the Escrow Agreement, the Tax Certificate, any Credit Agreement, any Liquidity Facility, the Pricing Certificate, the Commercial Paper Notes, the Series 2019 Bonds, the Continuing Disclosure Undertaking, the Official Statement, the Offering Memorandum, any other documents required in connection with any credit enhancement or liquidity support, and any other documents or certificates necessary or appropriate to close the sale and issuance of the Series 2019 Bonds authorized hereby and all related transactions.

“2019 Registrar” means the Series 2019 Paying Agent acting as agent of the Board for the registration of the Series 2019 Bonds, and any successor thereto.

Section 1.03. Article and Section References. Except as otherwise indicated, references to Articles and Sections are to Articles and Sections of this Eighteenth Supplemental Resolution.

Section 1.04. Construction. This Eighteenth Supplemental Resolution shall be construed as follows:

(a) The captions herein are for convenience only and in no way define, limit or describe the scope or intent of any provisions hereof.

(b) Any Series 2019 Bonds authorized hereby held by the Board shall not be deemed to be Outstanding for the purpose of redemption, for the purpose of consents hereunder or for any other purpose.

Section 1.05. Successors. All of the covenants, stipulations, obligations and agreements by or on behalf of and any other provisions for the benefit of the Board set forth in the Resolution shall bind and inure to the benefit of any successors thereof and shall bind and inure to the benefit of any officer, board, district, commission, authority, agent, enterprise or instrumentality to whom or to which there shall be transferred by or in accordance with law

any right, power or duty of the Board or of their respective successors, if any, the possession of which is necessary or appropriate in order to comply with any such covenants, stipulations, obligations, agreements, or other provisions hereof.

Section 1.06. Parties Interested Herein. Except as otherwise expressly provided in the Resolution, nothing expressed or implied in the Resolution is intended or shall be construed to confer upon or to give to any Person, other than the Board, the Series 2019 Paying Agent, the Issuing and Paying Agent and the owners from time to time of the Series 2019 Bonds authorized hereby, any right, remedy or claim under or by reason hereof or any covenant, condition or stipulation hereof. All the covenants, stipulations, promises and agreements set forth herein by and on behalf of the Board shall be for the sole and exclusive benefit of the Board, the Series 2019 Paying Agent, the Issuing and Paying Agent, and the owners from time to time of the Series 2019 Bonds authorized hereby.

Section 1.07. Ratification. All action heretofore taken (not inconsistent with the provisions of the Resolution) by the officers of the Board, toward the Series 2019 Project, the Refunding Project and the issuance, sale and delivery of the Series 2019 Bonds authorized hereby for such purposes, be, and the same hereby is, ratified, approved and confirmed, including, without limitation, the sale of the Series 2019 Bonds authorized hereby and the preparation and distribution of the Preliminary Official Statement and final Official Statement in connection therewith.

Section 1.08. Resolution Irrepealable. After any Series 2019 Bonds authorized hereby are issued, the Resolution shall constitute an irrevocable contract between the Board and owners of the Series 2019 Bonds authorized hereby; and the Resolution shall be and remain irrepealable until the Series 2019 Bonds authorized hereby and the interest thereon shall be fully paid, as herein provided.

Section 1.09. Repealer. All bylaws, orders and resolutions, or parts thereof, inconsistent herewith are hereby repealed to the extent only of such inconsistency. This repealer shall not be construed to revive any bylaw, order, resolution or part thereof, heretofore repealed.

Section 1.10. Severability. If any provision of the Resolution shall be held invalid or unenforceable, such holding shall not affect any other provisions hereof.

Section 1.11. Effective Date. This Eighteenth Supplemental Resolution shall become effective immediately upon its passage. Pursuant to the Supplemental Public Securities Act, solely with respect to the Refunding Project, the Board may by subsequent action renew and re-adopt this Eighteenth Supplemental Resolution on an annual basis by amending and/or extending the effective date hereof.

ARTICLE II

AUTHORIZATION OF THE SERIES 2019 PROJECT, THE REFUNDING PROJECT AND CERTAIN RELATED DOCUMENTS

Section 2.01. Authority for Resolution. The Resolution is adopted by virtue of the plenary powers of the Board as a constitutionally established body corporate under Article VIII, Section 5 of the constitution of the State and Title 23, Article 41, Colorado Revised Statutes, as amended, and under the particular authority of the Institutional Enterprise Statute, the Auxiliary Facilities Enterprise Act, the Refunding Act and the Supplemental Public Securities Act. The Board has ascertained and hereby determines that each matter and thing as to which provision is made herein is necessary in order to carry out and effectuate the purposes of the Board in accordance with such powers and authority.

Section 2.02. Necessity of the Series 2019 Project, the Refunding Project, the Commercial Paper Notes and Series 2019 Bonds. It is necessary and for the best interests of the Board and the School of Mines that the Board undertake the Series 2019 Project and the Refunding Project as herein authorized and obtain funds therefor by issuing the Commercial Paper Notes and the Series 2019 Bonds; and the Board hereby so determines and declares.

Section 2.03. Authorization of the Series 2019 Project and the Refunding Project. The Board hereby determines to undertake the Series 2019 Project and the Refunding Project pursuant to the Institutional Enterprise Statute, the Auxiliary Facilities Enterprise Act, the State Intercept Act, the Refunding Act and the Supplemental Public Securities Act, and further determines that all requirements and limitations of such statutes have been met. In addition, the Board hereby determines that (i) the limitations and requirements imposed by the Resolution for the issuance of Bonds have been met and (ii) the Series 2019 Project and the Refunding Project are hereby authorized. In connection with the Commercial Paper Notes and the Series 2019 Bonds, and the Series 2019 Project and the Refunding Project, the Board will comply with the provisions of the Board's Debt Management Policy (April 2019), as amended from time to time.

Section 2.04. Provision for Sale of Commercial Paper Notes and Series 2019 Bonds. The Board Representative and the officers of the Board, or any of them, are hereby authorized, for and on behalf of the Board, to accept and execute the Dealer Agreement and the Issuing and Paying Agent Agreement, in substantially the form filed with the Board following the date of adoption of this Eighteenth Supplemental Resolution, upon the terms and conditions provided in this Eighteenth Supplemental Resolution, the Pricing Certificate and such Dealer Agreement and the Issuing and Paying Agent Agreement. The Board Representative and the officers of the Board, or any of them, are hereby authorized, for and on behalf of the Board, to accept and execute the Bond Purchase Agreement submitted by the Series 2019 Underwriter for the purchase of the Series 2019 Bonds, in substantially the form filed with the Board following the date of adoption of this Eighteenth Supplemental Resolution, bearing interest at the rates therein designated and otherwise upon the terms and conditions provided in this Eighteenth Supplemental Resolution, the Pricing Certificate and such Bond Purchase Agreement.

Section 2.05. Approval and Use of Preliminary Official Statement and Official Statement; Preliminary Offering Memorandum and Offering Memorandum, Rule 15c2-12; and Continuing Disclosure Undertaking. The distribution and use of a Preliminary Official Statement or a Preliminary Offering Memorandum relating to the Series 2019 Bonds, in substantially the form filed with the Board following the date of adoption of this Eighteenth Supplemental Resolution, is hereby ratified and approved. The Chairman of the Board is hereby authorized, directed and empowered to determine when such Preliminary Official Statement or Preliminary Offering Memorandum may be deemed final within the meaning of Securities and Exchange Rule 15c2-12, subject to permitted omissions, and thereupon to give a certificate to such effect. The Chairman of the Board is hereby authorized to execute and deliver the final Official Statement or Offering Memorandum relating to the Series 2019 Bonds authorized hereby and the Series 2019 Underwriter may thereafter distribute the same. The appropriate officers of the Board and the School of Mines are hereby authorized to complete and execute the Continuing Disclosure Undertaking on behalf of and in the name of the Board, in substantially the form attached to the Preliminary Official Statement or Preliminary Offering Memorandum.

Section 2.06. Execution of Documents. The following individuals, namely: the Chairman of the Board, the Executive Vice President and Treasurer of the Board and the President of the School of Mines (and any other officers authorized by law to act on their behalf in their absence) are hereby authorized to execute and deliver, as appropriate, the Transaction Documents and to take any action with respect to any matter required to accomplish the same.

ARTICLE III

AUTHORIZATION AND TERMS OF SERIES 2019 BONDS

Section 3.01. Authorization and Designation of Series 2019 Bonds; Principal Amount. Pursuant to the provisions of the Master Resolution, there is hereby authorized the borrowing of funds, and to evidence such borrowing there are hereby authorized Bonds of the Board to be issued in one or more series and to bear the designations provided in the Pricing Certificate and the Issuing and Paying and Agent Agreement.

Section 3.02. Purposes. The Series 2019 Bonds are authorized for the purpose of financing the Series 2019 Project and the Refunding Project, funding any capitalized interest and paying certain costs of issuance relating to the Series 2019 Bonds authorized hereby, all as more specifically provided in Article V hereof.

Section 3.03. General Terms.

(a) **General.** The Series 2019 Bonds authorized hereby shall be issued in registered form only in Authorized Denominations, and shall be numbered in such manner as the Series 2019 Paying Agent determines. The Series 2019 Bonds authorized hereby shall be dated the Closing Date and shall bear interest from the Closing Date at the rates determined pursuant to the provisions herein. Additionally, the Series 2019 Bonds authorized hereby shall mature on the dates provided in the Pricing Certificate.

The Series 2019 Bonds authorized hereby shall also be subject to optional and mandatory redemption and optional and mandatory tender for purchase as provided in the Pricing Certificate.

(b) ***Form of Series 2019 Bonds and Commercial Paper Notes.*** The Series 2019 Bonds shall be in substantially the form set forth in the Pricing Certificate, which form is hereby incorporated by reference. The Commercial Paper Notes shall be in substantially the form set forth in the Issuing and Paying Agent Agreement, which form is hereby incorporated by reference.

(c) ***State Tax Exemption.*** Pursuant to Section 23-5-105, Colorado Revised Statutes, as amended, the Series 2019 Bonds authorized hereby, their transfer, and the income therefrom shall forever be and remain free and exempt from taxation by the State or any subdivision thereof.

Section 3.04. Principal Amounts; Maturities; Interest Rates. The Series 2019 Bonds shall mature, subject to the right of prior redemption as provided in Article IV hereof, on the dates and in the aggregate principal amounts, and shall bear interest, payable on each Interest Payment Date, as provided below:

(a) ***Generally.*** The Commercial Paper Notes shall be issued to fund the Series 2019 Project in the maximum aggregate principal amount of not to exceed \$180,000,000 outstanding at any time. The Series 2019 Bonds (excluding the Commercial Paper Notes) shall be issued to fund the Series 2019 Project in the maximum aggregate principal amount of not to exceed \$50,000,000. If the Series 2019 Bonds are issued solely as fixed rate Bonds to fund the Series 2019 Project, such fixed rate Series 2019 Bonds shall be issued in the maximum aggregate principal amount of not to exceed \$200,000,000. The Series 2019 Bonds shall be issued to fund the Refunding Project in the maximum aggregate principal amount of not to exceed \$200,000,000. The Series 2019 Bonds authorized hereby shall be issued in one or more series, shall bear interest at a fixed, or if a variable rate, at a rate or rates not in excess of the Maximum Interest Rate, shall mature as term bonds or serial bonds, or both, and not later than December 1, 2059. The Commercial Paper Notes shall not bear interest at a rate or rates in excess of the Maximum Interest Rate.

(b) ***Pricing Delegation.*** The Board Representative is authorized, without further approval of the Board, to make any and all determinations listed in Section 11-57-205(1), Colorado Revised Statutes, as amended, provided such determinations are not inconsistent with the standards set forth in this Eighteenth Supplemental Resolution. In furtherance thereof, the Board Representative is hereby authorized, without further approval of the Board, to determine in conformity with the standards set forth in this Eighteenth Supplemental Resolution and after the Series 2019 Bonds authorized hereby have been priced in the market: (A) the final designations of one or more series or subseries of the Series 2019 Bonds authorized hereby; (B) the principal amount of each series or subseries of the Series 2019 Bonds authorized hereby; (C) the coupon interest rate or rates (whether fixed or variable) on the Series 2019 Bonds authorized hereby; (D) the maturity or maturities of the Series 2019 Bonds authorized hereby (any of which

may include such Series 2019 Bonds bearing different interest rates) and the amount and date of any mandatory sinking fund redemptions; (E) provisions for the optional, mandatory or extraordinary redemption or tender of any or all of the Series 2019 Bonds authorized hereby prior to maturity; (F) the purchase price of the Series 2019 Bonds authorized hereby; (G) whether the Series 2019 Bonds authorized hereby will constitute Tax Exempt Obligations, Taxable Obligations, and the other matters set forth in Article VII hereof entitled “FEDERAL TAX LAW MATTERS”; (H) whether or not to utilize bond insurance, a Credit Facility, a Liquidity Facility or a debt service reserve policy for the Series 2019 Bonds authorized hereby and the execution of all agreements, documents and certificates in connection therewith; (I) whether or not the Series 2019 Bonds authorized hereby will be sold pursuant to a negotiated sale, a competitive sale or direct placement; (J) whether or not there will be any capitalized interest; (K) which elements of the Series 2019 Project and the Refunding Project will be financed with the proceeds of the Series 2019 Bonds authorized hereby; (L) whether or not to qualify any of the Series 2019 Bonds authorized hereby under the State Intercept Program; and (M) whether or not to issue the Series 2019 Bonds authorized hereby as Commercial Paper Notes, Capital Appreciation Bonds, Credit Enhanced Bonds or as obligations that bear interest at a fixed, variable, adjustable, convertible or similar rate. The determinations described herein shall be evidenced by a Pricing Certificate filed with the Board, and except as otherwise expressly provided herein or in the Master Resolution, the terms of the Series 2019 Bonds authorized hereby shall be as set forth in the Pricing Certificate and incorporated by reference into this Eighteenth Supplemental Resolution.

(c) ***Authorized Denominations.*** The Series 2019 Bonds authorized hereby shall be issued in Authorized Denominations.

(d) ***Computation of Interest.*** The Series 2019 Bonds authorized hereby shall bear interest from the Closing Date at the applicable rate set forth in the Pricing Certificate. The amount of interest so payable on such Series 2019 Bonds on any Interest Payment Date shall be computed on the basis set forth in the Pricing Certificate.

(e) ***Appointment of Paying Agent, Registrar and Calculation Agent.*** Wells Fargo Bank, National Association, is hereby appointed the Series 2019 Paying Agent and the 2019 Registrar.

(f) ***Appointment of Dealer and Underwriter.*** Morgan Stanley & Co. LLC, is hereby appointed as the Dealer and the Underwriter.

Section 3.05. Payment of Bond Requirements.

(a) ***Principal and Final Interest.*** The principal, tender price or Redemption Price of and the final interest payment on any Series 2019 Bond authorized hereunder shall be payable to the owner thereof as shown on the registration books maintained by the 2019 Registrar upon maturity, tender or prior redemption thereof and upon presentation and surrender at the principal office of the Series 2019 Paying Agent. If any Series 2019 Bond authorized hereunder shall not be paid upon such presentation and

surrender at or after maturity, it shall continue to draw interest (but without compounding of interest) at the rate borne by it until the principal thereof is paid in full.

(b) **Interest.** The interest due on any Series 2019 Bond authorized hereunder on any Interest Payment Date, other than the final interest payment thereon, shall be paid to the owner thereof, as shown on the registration books kept by the 2019 Registrar at the close of business on the close of business on the fifteenth day (whether or not a Business Day) of the calendar month next preceding each regularly scheduled Interest Payment Date for the Series 2019 Bonds authorized hereunder (the “Regular Record Date”). Any such interest not so timely paid or duly provided for shall cease to be payable to the person who is the owner of such Series 2019 Bond authorized hereunder on the Regular Record Date and shall be payable to the person who is the owner of such Series 2019 Bond authorized hereunder at the close of business on a Special Record Date for the payment of any such defaulted interest. Such Special Record Date shall be fixed in accordance with Section 3.10 of the Master Resolution.

(c) **Payment of Interest.** All payments of interest (other than the final interest payment) on any Series 2019 Bond authorized hereunder shall be paid to the person entitled thereto pursuant to Section 3.05(b) by check mailed or electronic transfer made on the Interest Payment Date to his or her address as it appears on the registration books kept by the 2019 Registrar (or, in the case of defaulted interest, the date selected by the 2019 Registrar for the payment of such defaulted interest), or, at the option of any owner of \$1,000,000 or more in principal amount of Series 2019 Bonds authorized hereunder, by wire transfer on such date to a bank within the continental United States of America as directed by such owner.

(d) **State Intercept Program.** The Board may elect to utilize the State Intercept Program for all or a portion of the Series 2019 Project or the Refunding Project. The final determination of which of the Series 2019 Bonds authorized hereunder (and any series thereof) are subject to the State Intercept Program shall be set forth in the Pricing Certificate. The Board is hereby directed to file with the State Treasurer a copy of this Eighteenth Supplemental Resolution, the Pricing Certificate and the Official Statement. The Board shall also make such filings as are required by the State Intercept Act. The Board hereby directs the Board Representative to take all action necessary to comply with the provisions of the State Intercept Act and qualify the Series 2019 Bonds authorized hereunder for the State Intercept Program. In the event that payments of the principal of and interest on the Series 2019 Bonds authorized hereunder are made by the State Treasurer pursuant to the provisions of the State Intercept Program, the Board hereby agrees that, to the extent such amounts paid by the State Treasurer have not been recovered by the State Treasurer from the sources set forth in Section 23-5-139(3) of the State Intercept Act, the Board shall, solely from Net Revenues remaining in the Revenue Fund and that are available for such purpose, pay to the State Treasurer an amount equal to the principal and interest payments made by the State Treasurer, less any such amounts previously recovered by or paid to the State Treasurer.

Section 3.06. Book-Entry System.

(a) Except as provided in subparagraph (c) of this Section, the Registered Owner of all of the Series 2019 Bonds authorized hereunder shall be DTC and the Series 2019 Bonds authorized hereunder shall be registered in the name of Cede & Co., as nominee for DTC. Payment of principal, purchase price, premium, if any, or interest for any Series 2019 Bond authorized hereunder registered in the name of Cede & Co. shall be made by wire transfer of New York clearing house or equivalent next day funds or by wire transfer of same day funds to the account of Cede & Co. at the address indicated on the Regular Record Date or Special Record Date for Cede & Co. in the Bond Register of the Series 2019 Paying Agent.

(b) The Series 2019 Bonds authorized hereunder shall be initially issued in the form of separate single authenticated fully registered Series 2019 Bond authorized hereunder for each separate stated maturity for the Series 2019 Bonds authorized hereunder. Upon initial issuance, the ownership of such Series 2019 Bonds authorized hereunder shall be registered in the Bond Register of the Series 2019 Paying Agent in the name of Cede & Co., as nominee of DTC. The Series 2019 Paying Agent and the Board may treat DTC (or its nominee) as the sole and exclusive owner of the Series 2019 Bonds authorized hereunder registered in its name for the purposes of payment of the principal, purchase price or redemption price of or interest on the Series 2019 Bonds authorized hereunder, selecting the Series 2019 Bonds authorized hereunder or portions thereof to be redeemed, giving any notice permitted or required to be given to Bondholders under the Master Resolution or this Eighteenth Supplemental Resolution, registering the transfer of Series 2019 Bonds authorized hereunder, obtaining any consent or other action to be taken by Bondholders and for all other purposes whatsoever, and neither the Series 2019 Paying Agent nor the Board shall be affected by any notice to the contrary. Neither the Series 2019 Paying Agent nor the Board shall have any responsibility or obligation to any Participant, any person claiming a beneficial ownership interest in the Series 2019 Bonds authorized hereunder under or through DTC or any Participant, or any other person which is not shown on the Bond Register as being a Bondholder, with respect to the accuracy of any records maintained by DTC or any Participant; the payment by DTC or any Participant of any amount in respect of the principal, purchase price and redemption price, if any, of or interest on the Series 2019 Bonds authorized hereunder; any notice which is permitted or required to be given to Bondholders under the Master Resolution and this Eighteenth Supplemental Resolution; the selection by DTC or any Participant of any person to receive payment in the event of a partial redemption of the Series 2019 Bonds authorized hereunder; any consent given or other action taken by DTC as Bondholder or any other purpose. The Series 2019 Paying Agent shall pay all principal, purchase price and redemption price, if any, of and interest on the Series 2019 Bonds authorized hereunder to DTC, and all such payments shall be valid and effective to fully satisfy and discharge the Board's obligations with respect to the principal, purchase price and redemption price, if any, of and interest on the Series 2019 Bonds authorized hereunder to the extent of the sum or sums so paid. No person other than DTC shall receive an authenticated Series 2019 Bond authorized hereunder evidencing the obligation of the Board to make payments of principal, purchase price and redemption price, if any, of and interest pursuant to the Master Resolution and this Eighteenth

Supplemental Resolution. Upon delivery by DTC to the Series 2019 Paying Agent of written notice to the effect that DTC has determined to substitute a new nominee in place of Cede & Co., and subject to the provisions herein with respect to Regular Record Dates or Special Record Dates, the words “Cede & Co.” in this Eighteenth Supplemental Resolution shall refer to such new nominee of DTC.

(c) In the event the Board determines that it is in the best interest of the Beneficial Owners that they be able to obtain bond certificates, and notifies DTC and the Notice Parties of such determination, then DTC will notify the Participants of the availability through DTC of bond certificates. In such event, the Series 2019 Paying Agent shall authenticate and shall transfer and exchange bond certificates as requested by DTC and any other Bondholders in appropriate amounts. In the event: (i) DTC determines to discontinue providing its services with respect to the Series 2019 Bonds authorized hereunder at any time by giving notice to the Notice Parties and discharging its responsibilities with respect thereto under applicable law; or (ii) the Board determines that DTC shall no longer so act, and delivers a written certificate to the Notice Parties to that effect, and there is no successor Securities Depository named, the Board and the Series 2019 Paying Agent shall be obligated to deliver bond certificates as described in this Eighteenth Supplemental Resolution. In the event bond certificates are issued, the provisions of the Master Resolution and this Eighteenth Supplemental Resolution shall apply to, among other things, the transfer and exchange of such certificates and the method of payment of principal, purchase price and redemption price, of and interest on such certificates. Whenever DTC requests the Board and the Series 2019 Paying Agent to do so, the Series 2019 Paying Agent and the Board will cooperate with DTC in taking appropriate action after reasonable notice (A) to make available one or more separate certificates evidencing the Series 2019 Bonds authorized hereunder to any DTC Participant having Series 2019 Bonds authorized hereunder credited to its DTC account; or (B) to arrange for another Securities Depository to maintain custody of certificates evidencing the Series 2019 Bonds authorized hereunder.

(d) Notwithstanding any other provision of the Master Resolution and this Eighteenth Supplemental Resolution to the contrary, so long as any Series 2019 Bond authorized hereunder is registered in the name of Cede & Co., as nominee of DTC, all payments with respect to the principal, purchase price and redemption price, if any, of and interest on such Series 2019 Bond authorized hereunder and all notices with respect to such Series 2019 Bond authorized hereunder shall be made and given, respectively, to DTC as provided in the Representation Letter.

(e) In connection with any notice or other communication to be provided to Bondholders pursuant to the Master Resolution and this Eighteenth Supplemental Resolution by the Board or the Series 2019 Paying Agent with respect to any consent or other action to be taken by Bondholders, the Board or the Series 2019 Paying Agent, as the case may be, shall establish a record date for such consent or other action and give DTC notice of such record date not less than fifteen (15) calendar days in advance of such record date to the extent possible. Notice to DTC shall be given only when DTC is the sole Bondholder.

NEITHER THE BOARD NOR THE SERIES 2019 PAYING AGENT WILL HAVE ANY RESPONSIBILITY OR OBLIGATION TO DTC PARTICIPANTS, INDIRECT PARTICIPANTS OR BENEFICIAL OWNERS WITH RESPECT TO: THE PAYMENT BY DTC, ANY DTC PARTICIPANT OR ANY INDIRECT PARTICIPANT OF THE PRINCIPAL OF, PREMIUM, IF ANY, OR INTEREST ON THE SERIES 2019 BONDS AUTHORIZED HEREUNDER; THE PROVIDING OF NOTICE TO DTC PARTICIPANTS, INDIRECT PARTICIPANTS OR BENEFICIAL OWNERS; THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC, ANY DTC PARTICIPANT OR ANY INDIRECT PARTICIPANT OR ANY CONSENT GIVEN OR OTHER ACTION TAKEN BY DTC AS OWNER OF THE SERIES 2019 BONDS AUTHORIZED HEREUNDER.

Section 3.07. Transfers Outside Book-Entry System. In the event (a) the Securities Depository determines not to continue to act as securities depository for the Series 2019 Bonds authorized hereunder, or (b) the Board determines that the Securities Depository shall no longer so act, and delivers a written certificate to the Notice Parties to that effect, then the Board will discontinue the book-entry system with the Securities Depository. If the Board determines to replace the Securities Depository with another qualified securities depository, the Board shall prepare or direct the preparation of a new, single, separate, fully registered Series 2019 Bond authorized hereunder for each of the maturities of the Series 2019 Bonds authorized hereunder, registered in the name of such successor or substitute qualified securities depository or its nominee or make such other arrangement acceptable to the Board and the Securities Depository as are not inconsistent with the terms of this Eighteenth Supplemental Resolution. If the Board fails to identify another qualified securities depository to replace the Securities Depository, then the Series 2019 Bonds authorized hereunder shall no longer be restricted to being registered in the registration books of the Series 2019 Paying Agent in the name of the Nominee, but shall be registered in such Authorized Denominations and names as the Securities Depository shall designate in accordance with the provisions of this Article III.

Section 3.08. Bond Register. The Series 2019 Paying Agent shall keep or cause to be kept at its principal corporate trust office sufficient books for the registration of, and registration of transfer of, the Series 2019 Bonds authorized hereunder, which Bond Register shall at all times during regular business hours be open to inspection by the Board. Upon presentation for registration of transfer, the Series 2019 Paying Agent shall, as provided herein and under such reasonable regulations as it may prescribe subject to the provisions hereof, register or register the transfer of the Series 2019 Bonds authorized hereunder, or cause the same to be registered or cause the registration of the same to be transferred, on such Bond Register.

ARTICLE IV

REDEMPTION

Section 4.01. Optional Redemption. Subject to the provisions of Article III of the Master Resolution, the Series 2019 Bonds authorized hereunder shall be subject to redemption prior to stated maturity at the option of the Board, in whole or in part, on the dates and in the principal amounts as set forth in the Pricing Certificate. Any terms of redemption of the Commercial Paper Notes shall be set forth in the Issuing and Paying Agent Agreement.

Section 4.02. Mandatory Sinking Fund Redemption. The Series 2019 Bonds authorized hereunder shall be subject to mandatory sinking fund redemption, if at all, on the dates and in the principal amounts as set forth in the Pricing Certificate.

Section 4.03. Selection for Redemption. If less than all of the Series 2019 Bonds authorized hereunder are called for prior redemption hereunder, the selection of the Series 2019 Bonds authorized hereunder or portions to be redeemed shall be made as provided in Section 3.06 of the Master Resolution. In the event a portion of any Series 2019 Bond authorized hereunder is so redeemed, the 2019 Registrar shall, without charge to the owner of such Series 2019 Bond authorized hereunder, authenticate a replacement Series 2019 Bond authorized hereunder for the unredeemed portion thereof.

Section 4.04. Redemption Procedures. Except as otherwise provided herein, the Series 2019 Bonds authorized hereunder shall be called for prior redemption and shall be paid by the Series 2019 Paying Agent upon notice as provided in Section 4.05 hereof. The 2019 Registrar shall not be required to transfer or exchange any Series 2019 Bond authorized hereunder after notice of the redemption of such Series 2019 Bond authorized hereunder has been given (except the unredeemed portion of such Series 2019 Bond authorized hereunder, if redeemed in part) or to transfer or exchange any Series 2019 Bond authorized hereunder during the period of 15 days next preceding the day such notice is given.

In addition, the 2019 Registrar is hereby authorized to comply with any operational procedures and requirements of the Securities Depository relating to redemption of Series 2019 Bonds authorized hereunder and notice thereof. The Board and the 2019 Registrar shall have no responsibility or obligation with respect to the accuracy of the records of the Securities Depository or a nominee therefor or any Participant of such Securities Depository with respect to any ownership interest in the Series 2019 Bonds authorized hereunder or the delivery to any Participant, Beneficial Owner or any other person (except to a registered owner of the Series 2019 Bonds authorized hereunder) of any notice with respect to the Series 2019 Bonds authorized hereunder, including any notice of redemption.

Any operational procedures and requirements relating to redemption of the Commercial Paper Notes shall be set forth in the Issuing and Paying Agent Agreement.

Section 4.05. Notice of Redemption. The 2019 Registrar shall cause notice of the redemption of the Series 2019 Bonds authorized hereunder being redeemed under this Article IV to be given in the form and manner described in Section 3.07 of the Master Resolution not less than 30 days nor more than 60 days prior to the redemption date.

The Board may provide that if at the time of mailing of notice of an optional redemption there shall not have been deposited with the Series 2019 Paying Agent moneys sufficient to redeem all the Series 2019 Bonds called for redemption, such notice may state that it is conditional and subject to the deposit of the redemption moneys with the Series 2019 Paying Agent not later than the opening of business five Business Days prior to the scheduled redemption date, and such notice will be of no effect unless such moneys are so deposited. In the event sufficient moneys are not on deposit on the required date, then the redemption will be

cancelled and on such cancellation date notice of such cancellation will be mailed to the holders of such Series 2019 Bonds, in the manner provided in the form of such Series 2019 Bonds.

Any notice requirements relating to redemption of the Commercial Paper Notes shall be set forth in the Issuing and Paying Agent Agreement.

Section 4.06. Tender and Purchase. Any provisions relating to tender and purchase of the Series 2019 Bonds prior to maturity shall be on the dates, in the manner and at the prices as set forth in the Issuing and Paying Agent Agreement and the Pricing Certificate.

ARTICLE V

ESTABLISHMENT OF FUNDS AND APPLICATION OF SERIES 2019 PROCEEDS

Section 5.01. Establishment of Funds and Accounts. In accordance with Section 5.01 of the Master Resolution, the following funds and accounts are hereby established:

- (a) within the Debt Service Fund, a Series 2019 Interest Account and a Series 2019 Principal Account to be held by the Series 2019 Paying Agent in trust for the benefit of the Bondholders;
- (b) the Series 2019 Expense Account to be held under the control of the Board;
- (c) the Escrow Account to be held under the control of the Escrow Agent under the Escrow Agreement; and
- (d) the Series 2019 Project Account to be held under the control of the Board.

Section 5.02. Application of Proceeds. The proceeds of the Series 2019 Bonds issued hereunder, upon the receipt thereof, shall be deposited promptly in an Insured Bank or Banks designated by the Board, shall be accounted for in the following manner and priority and are hereby pledged therefor:

- (a) ***Escrow Account.*** First, on the Closing Date, proceeds of the Series 2019 Bonds authorized hereunder shall be deposited to the Escrow Account, if any, which moneys shall be used to finance the Refunding Project, if any.
- (b) ***Series 2019 Project Account.*** Second, on the Closing Date, proceeds of the Series 2019 Bonds authorized hereunder shall be deposited to the Series 2019 Project Account, which moneys shall be used by the School of Mines to finance the Series 2019 Project.
- (b) ***Series 2019 Expense Account.*** Third, from the proceeds of the Series 2019 Bonds authorized hereunder, there shall be deposited to the Series 2019 Expense Account, which Series 2019 Expense Account shall be under the control of the Board, an amount sufficient, together with any other moneys available therefore, to pay all expenses

associated with the issuance of the Series 2019 Bonds authorized hereunder. Any moneys remaining in the Series 2019 Expense Account six months after the date of issuance of any Series 2019 Bonds authorized hereunder shall be transferred to the Series 2019 Principal Account of the Debt Service Fund with respect to the Series 2019 Bonds authorized hereunder.

Section 5.03. Debt Service Fund. The Debt Service Fund shall be invested and reinvested as directed by a Board Representative in Permitted Investments; provided, however that if no direction is received by the Series 2019 Paying Agent, moneys in the Debt Service Fund shall remain uninvested. The Series 2019 Paying Agent shall make deposits into the Debt Service Fund as follows:

(a) ***Series 2019 Interest Account.*** The Series 2019 Paying Agent shall deposit into the Series 2019 Interest Account amounts received from the Board, as provided in the Master Resolution. The Series 2019 Paying Agent shall also deposit into the Series 2019 Interest Account any other amounts deposited with the Series 2019 Paying Agent for deposit in the Series 2019 Interest Account or transferred from other funds and accounts for deposit therein (including any capitalized interest). Earnings on all other amounts in the Series 2019 Interest Account shall be retained in such subaccount. The Series 2019 Paying Agent shall establish separate sub-accounts in the Series 2019 Interest Account for each source of deposit (including any investment income thereon) made into the Series 2019 Interest Account so that the Series 2019 Paying Agent may at all times ascertain the date of deposit, the amounts, and the source of the funds in each sub-account.

Except as otherwise provided in this Section, all amounts held at any time in the Series 2019 Interest Account shall be used solely for the payment of interest on the Series 2019 Bonds authorized hereunder.

(b) ***Series 2019 Principal Account.*** The Series 2019 Paying Agent shall deposit into the Series 2019 Principal Account amounts received from the Board, as provided in the Master Resolution. The Series 2019 Paying Agent shall also deposit into the Series 2019 Principal Account any other amounts deposited with the Series 2019 Paying Agent for deposit in the Series 2019 Principal Account or transferred from other funds and accounts for deposit therein. Earnings on all other amounts in the Series 2019 Principal Account shall be retained in such subaccount. The Series 2019 Paying Agent shall establish separate sub-accounts in the Series 2019 Principal Account for each source of deposit (including any investment income thereon) made into the Series 2019 Principal Account so that the Series 2019 Paying Agent may at all times ascertain the date of deposit, the amounts, and the source of the funds in each sub-account.

Except as otherwise provided in this Section, all amounts held at any time in the Series 2019 Principal Account shall be used solely for the payment of principal on the Series 2019 Bonds authorized hereunder.

Section 5.04. Series 2019 Expense Account.

(a) There shall, be deposited into the Series 2019 Expense Account the amount as provided in Section 5.02.

(b) The Board shall make payments or disbursements from the Series 2019 Expense Account upon receipt of invoices for Costs of Issuance, as approved for payment by a Board Representative.

(c) Moneys held in the Series 2019 Expense Account shall be invested and reinvested as directed by the Board in Permitted Investments. Earnings on the Series 2019 Expense Account shall be deposited into such account. Any amounts remaining in the Series 2019 Expense Account six months after the Closing Date shall be transferred to the Series 2019 Principal Account of the Debt Service Fund and the Series 2019 Expense Account shall be closed.

Section 5.05. Application of Series 2019 Project Account. Any moneys credited to the Series 2019 Project Account shall be used, without requisition, voucher or other direction or further authority than is herein contained, to finance the Series 2019 Project. Upon completion of the Series 2019 Project by the Board in accordance with this Resolution, all money remaining in the Series 2019 Project Account may be used for any other lawful capital expenditures of the Board or may be transferred to the Series 2019 Principal Account of the Debt Service Fund and used with respect to the Series 2019 Bonds authorized hereunder.

Section 5.06. Series 2019 Underwriter Not Responsible. The Series 2019 Underwriter, any associate thereof, and any subsequent owner of any Series 2019 Bond authorized hereunder shall in no manner be responsible for the application or disposal by the Board or by any officer or any other employee or agent of the Board or the School of Mines of the moneys derived from the sale of the Series 2019 Bonds authorized hereunder or of any other moneys herein designated.

In accordance with the Master Resolution, the Board hereby authorizes the creation of certain accounts in respect of the Commercial Paper Notes to be more fully set forth in the Issuing and Paying Agent Agreement. Such accounts shall include, but not be limited to: the Commercial Paper Credit Agreement Account; the Commercial Paper Expense Account, the Commercial Paper Proceeds Account and the Commercial Paper Project Account, including any accounts and subaccounts therein.

ARTICLE VI

TAX COVENANTS

Section 6.01. Series 2019 Rebate Account. The Board hereby agrees that it will execute the Tax Certificate. The Board shall establish and maintain the Series 2019 Rebate Account within the Rebate Fund which account will be funded if so required under the Tax Certificate and amounts in such rebate account shall be held and disbursed in accordance with the Tax Certificate. The Series 2019 Paying Agent shall not be responsible for calculating rebate amounts or for the adequacy or correctness or any rebate report or rebate calculations.

Section 6.02. Preservation of Tax Exemption.

(a) The Board shall comply with those covenants and agreements set forth in the Tax Certificate.

(b) The Board shall not use or permit the use of any proceeds of the Tax Exempt Obligations or any other funds of the Board held by the Series 2019 Paying Agent under this Eighteenth Supplemental Resolution, directly or indirectly, to acquire any securities or obligations, and shall not use or permit the use of any amounts received by the Board or the Series 2019 Paying Agent with respect to the Tax Exempt Obligations in any manner, and shall not take or permit to be taken any other action or actions, which would cause any Tax Exempt Obligation to be “federally guaranteed” within the meaning of Section 149(b) of the Code or an “arbitrage bond” within the meaning of Section 148 of the Code and applicable regulations promulgated from time to time thereunder and under Section 103(c) of the Code. The Board shall observe and not violate the requirements of Section 148 of the Code and any such applicable regulations. In the event the Board is of the opinion that it is necessary to restrict or limit the yield on the investment of money held by the Series 2019 Paying Agent or to use such money in certain manners, in order to avoid the Tax Exempt Obligations being considered “arbitrage bonds” within the meaning of Section 148 of the Code and the regulations thereunder as such may be applicable to the Tax Exempt Obligations at such time, the Board shall issue to the Series 2019 Paying Agent a certificate to such effect together with appropriate instructions, in which event the Series 2019 Paying Agent shall take such action as it is directed to take to use such money in accordance with such certificate and instructions, irrespective of whether the Series 2019 Paying Agent shares such opinion.

(c) The Board shall at all times do and perform all acts and things permitted by law and this Eighteenth Supplemental Resolution which are necessary or desirable in order to assure that interest paid on the Tax Exempt Obligations will not be included in gross income for federal income tax purposes (other than with respect to Tax Exempt Obligations held by a Bondholder who is or was a “substantial user” or “related party” within the meaning of Section 147(a) of the Code) and shall take no action that would result in such interest being included in gross income for federal income tax purposes (other than with respect to Tax Exempt Obligations held by a Bondholder who is or was a “substantial user” or “related party” within the meaning of Section 147(a) of the Code).

ARTICLE VII

ADDITIONAL EVENTS OF DEFAULT

The following shall be an Event of Default under Section 10.03 of the Master Resolution with respect to the Tax Exempt Obligations issued pursuant to this Eighteenth Supplemental Resolution:

The occurrence of any event or failure to comply with any provision of the Tax Certificate which results in interest on the Tax Exempt Obligations being includible in gross income for federal income tax purposes.

ARTICLE VIII

MISCELLANEOUS

Section 8.01. Notices.

(a) Any notice, request, direction, designation, consent, acknowledgment, certification, appointment, waiver or other communication required or permitted by this Eighteenth Supplemental Resolution or the Series 2019 Bonds authorized hereunder must be in writing except as expressly provided otherwise in this Eighteenth Supplemental Resolution or the Series 2019 Bonds authorized hereunder.

(b) Any notice or other communication, unless otherwise specified, shall be sufficiently given and deemed given when mailed by first-class mail, postage prepaid, addressed to the Board or the Series 2019 Paying Agent at the addresses provided below or when delivered by hand and received by the Board or the Series 2019 Paying Agent at the addresses provided below:

- | | |
|---|---|
| (i) As to the Board: | The Board of Trustees of the
Colorado School of Mines
Guggenheim Building, #227
1500 Illinois Street
Golden, Colorado 80401
Telephone: (303) 273-3240
Facsimile: (303) 273- 3950
Attention: Executive Vice President |
| (ii) As to the Series 2019
Paying Agent: | Wells Fargo Bank National Association
1700 Lincoln Street, 10th Floor
Denver, Colorado 80203
Telephone: (303) 863-6480
Facsimile: (303) 863-5645
Attention: Corporate Trust Services |

(c) Any addressee may designate additional or different addresses for purposes of this Section.

Section 8.02. Notices to Rating Agencies. The Board shall provide or shall cause to be provided to each of the Rating Agencies then rating the Series 2019 Bonds authorized hereunder, written notice of the following events related to the Series 2019 Bonds authorized hereunder:

(a) the redemption, acceleration or defeasance of the Series 2019 Bonds authorized hereunder;

(b) any successor Series 2019 Paying Agent;

(c) any amendments or supplements to the Master Resolution or this Eighteenth Supplemental Resolution; and

(d) the issuance by the Board of any additional Bonds or Series 2019 Bonds under the Master Resolution.

Notices to the Rating Agencies shall be sent to the following addresses:

(i) To Moody's: Moody's Investors Service, Inc.
99 Church Street
New York, New York 10007
Attention: Municipal Structured Finance
Group

(ii) To Standard & Poor's: S&P Global Ratings
55 Water Street, 38th Floor
New York, New York 10041
Attention: Municipal Structured Group

Section 8.03. Modification of Master Resolution and this Eighteenth Supplemental Resolution. The Board may, from time to time and at any time, execute and deliver a Supplemental Resolution supplementing and/or amending the Master Resolution and this Eighteenth Supplemental Resolution in the manner set forth in Article XII of the Master Resolution.

Section 8.04. Applicability of Master Resolution. Except as otherwise provided herein, the provisions of the Master Resolution govern the Series 2019 Bonds authorized hereunder. The rights, undertakings, covenants, agreements, obligations, warranties and representations of the Board set forth in the Master Resolution shall in respect of the Series 2019 Bonds authorized hereunder be deemed the rights, undertakings, covenants, agreements, obligations, warranties and representations of the Board.

Section 8.05. Approval, Authorization and Ratification of Certain Documents. The Board Representative is hereby authorized, without further approval of the Board, but in consultation with the Finance and Audit Committee of the Board, to approve the form of the Transaction Documents subsequent to the meeting at which this Eighteenth Supplemental Resolution is being adopted. The appropriate officers of the Board set forth in Section 8.08 below, are hereby authorized and directed to execute and deliver the Transaction Documents in such forms, with such changes therein, not inconsistent with this Eighteenth Supplemental Resolution and the Master Resolution, as are approved by the Board Representative and the officer or officers executing the same (whose signature or signatures thereon shall constitute conclusive evidence of his, her or their approval of any changes appearing therein). The Board

further hereby authorizes and directs the Board Representative and the appropriate officers of the School of Mines to execute and deliver any other documents or instruments related to the issuance of the Series 2019 Bonds authorized hereby and the completion of the transactions contemplated by this Eighteenth Supplemental Resolution, the Master Resolution, the Transaction Documents or any of the documents referred to in this Section; and to attest, and, to the extent appropriate, affix the School of Mines' seal to, each such document. The Board hereby ratifies and authorizes the distribution and use of the Official Statement, including all appendices, amendments and supplements thereto in connection with the issuance and sale of the Series 2019 Bonds authorized hereby.

Section 8.06. Authorization of Officers. The members of the Board and the Board Representative are hereby authorized and directed to take all action in conformity with this Eighteenth Supplemental Resolution, the Master Resolution, the other documents governing the Transaction Documents and the investment of funds in connection therewith, the Constitution and laws of the State necessary or reasonably required to effectuate the issuance of the Series 2019 Bonds authorized hereby and for carrying out, giving effect to and consummating the transactions contemplated by this Eighteenth Supplemental Resolution, the Master Resolution, the Transaction Documents and the security therefor and the investment of funds in connection therewith, including, but not limited to, the execution and delivery of documents that are necessary or convenient in connection therewith. Notwithstanding any other provision hereof, or of the Master Resolution, any Supplemental Resolution or any other agreement, instrument or certificate relating to Series 2019 Bonds authorized hereby, any document relating to the Series 2019 Bonds authorized hereby that must or may be signed by the Chairman of the Board may, in his or her absence, be signed by any Vice Chairman or the Secretary or Treasurer of the Board with the same effect as if it was signed by the Chairman of the Board.

Section 8.07. Payments or Actions Occurring on Non-Business Days. If a payment date is not a Business Day at the place of payment or if any action required hereunder is required on a date that is not a Business Day, then payment may be made at that place on the next Business Day or such action may be taken on the next Business Day with the same effect as if payment were made on the action taken on the stated date, and no interest shall accrue for the intervening period.

Section 8.08. Governing Law. This Eighteenth Supplemental Resolution shall be governed by and construed in accordance with the laws of the State.

Section 8.09. Counterparts. This Eighteenth Supplemental Resolution may be signed in several counterparts. Each will be an original, but all of them together constitute the same instrument.

ADOPTED AND APPROVED as of the 20th day of May, 2019.

[SEAL]

BOARD OF TRUSTEES OF THE
COLORADO SCHOOL OF MINES

By _____
Thomas Jorden
Chairman

Attest:

By _____
Kirsten M. Volpi
Executive Vice President, Chief
Operating Officer, Chief Financial
Officer and Treasurer of the Board

[Signature Page to Eighteenth Supplemental Resolution]