



COLORADO SCHOOL OF MINES

RESEARCH BENCHMARKING AND PROJECTIONS UPDATE

FINAL REPORT, JUNE 2, 2022

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2022 RESEARCH BENCHMARKING

2022 RESEARCH PROJECTIONS

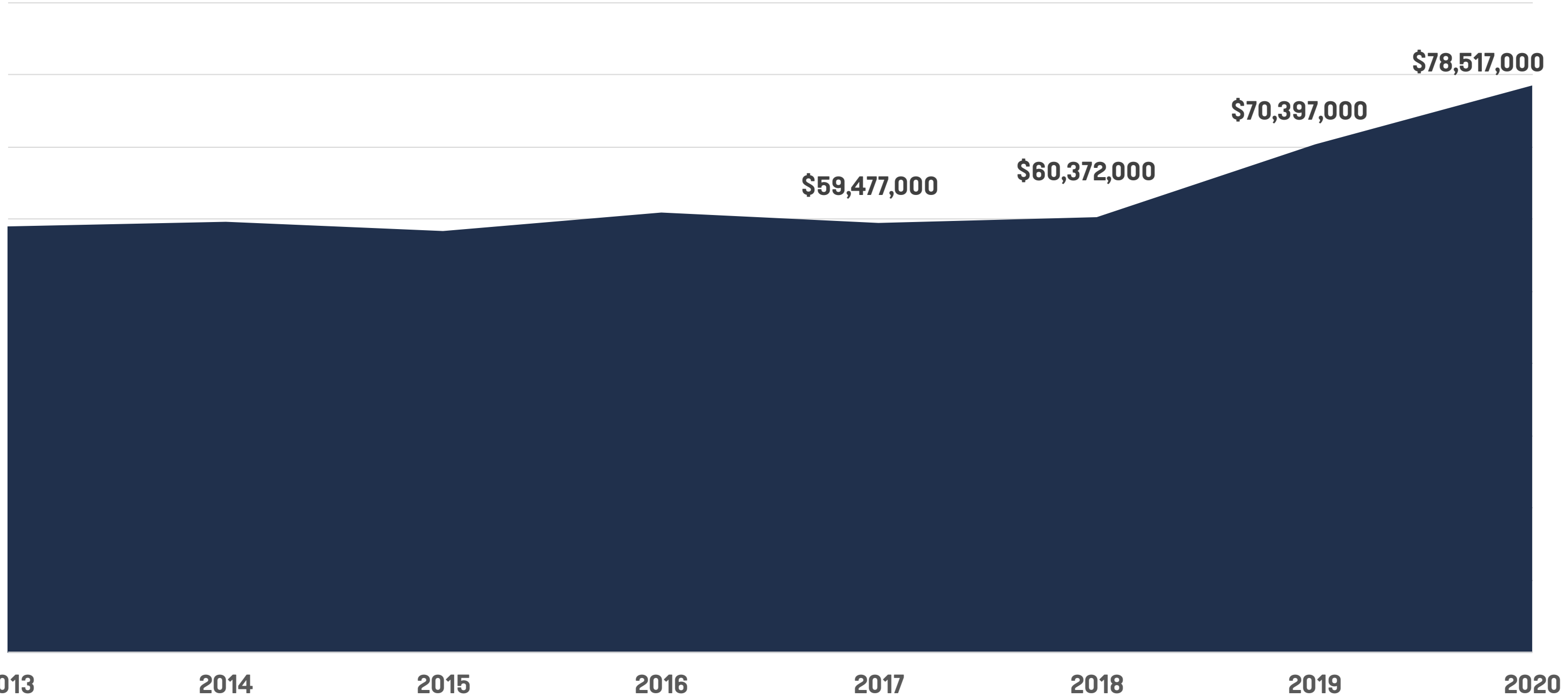
BUILDING PROJECTIONS



2022 RESEARCH BENCHMARKING

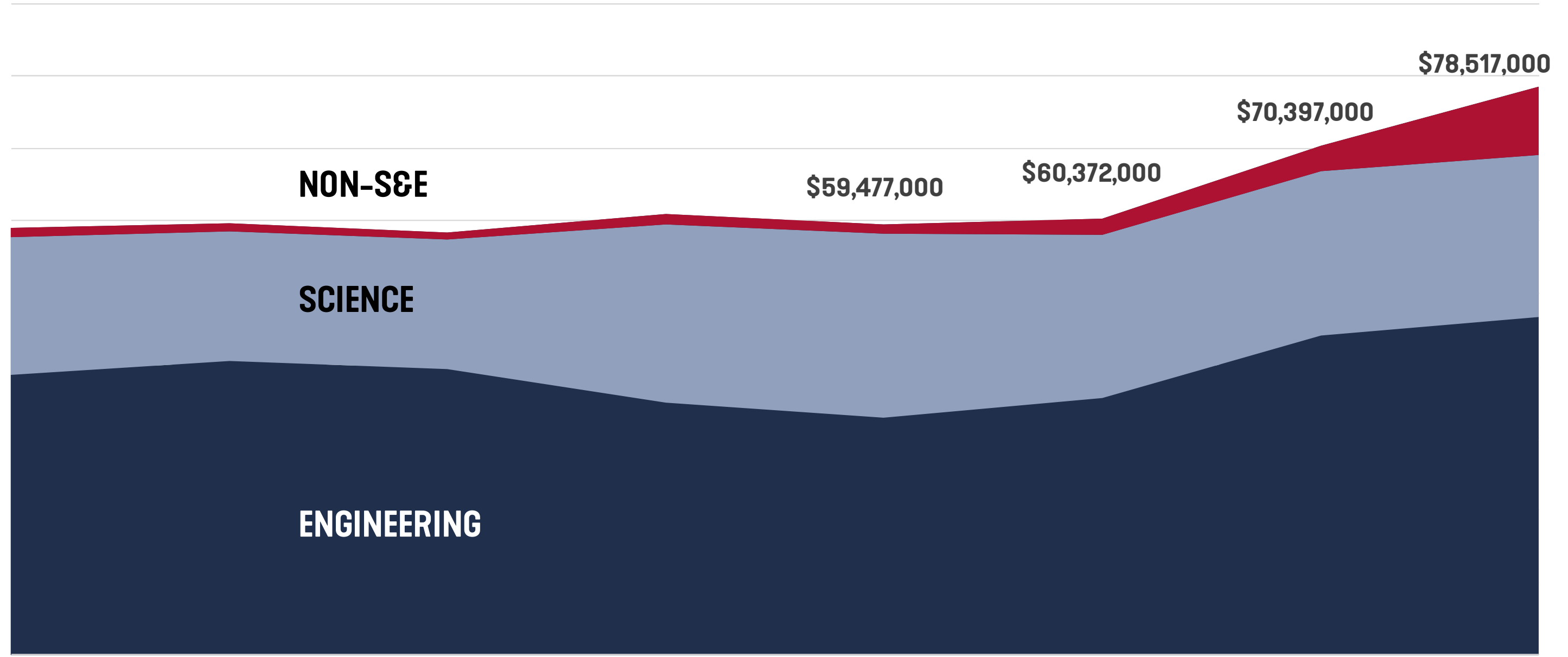
MINES RESEARCH EXPENDITURES

PER NATIONAL SCIENCE FOUNDATION



MINES RESEARCH EXPENDITURES

PER NATIONAL SCIENCE FOUNDATION



2013

2014

2015

2016

2017

2018

2019

2020

MINES RESEARCH PEERS



ARIZONA STATE UNIVERSITY



CALIFORNIA INSTITUTE OF TECHNOLOGY



Colorado State University

COLORADO STATE UNIVERSITY



GEORGIA INSTITUTE OF TECHNOLOGY



MASSACHUSETTS INSTITUTE OF TECHNOLOGY



MICHIGAN TECHNOLOGICAL UNIVERSITY



MISSOURI UNIVERSITY OF SCIENCE & TECHNOLOGY



NEW JERSEY INSTITUTE OF TECHNOLOGY



NEW MEXICO TECH



RENSSELAER POLYTECHNIC INSTITUTE



SOUTH DAKOTA SCHOOL OF MINES & TECHNOLOGY



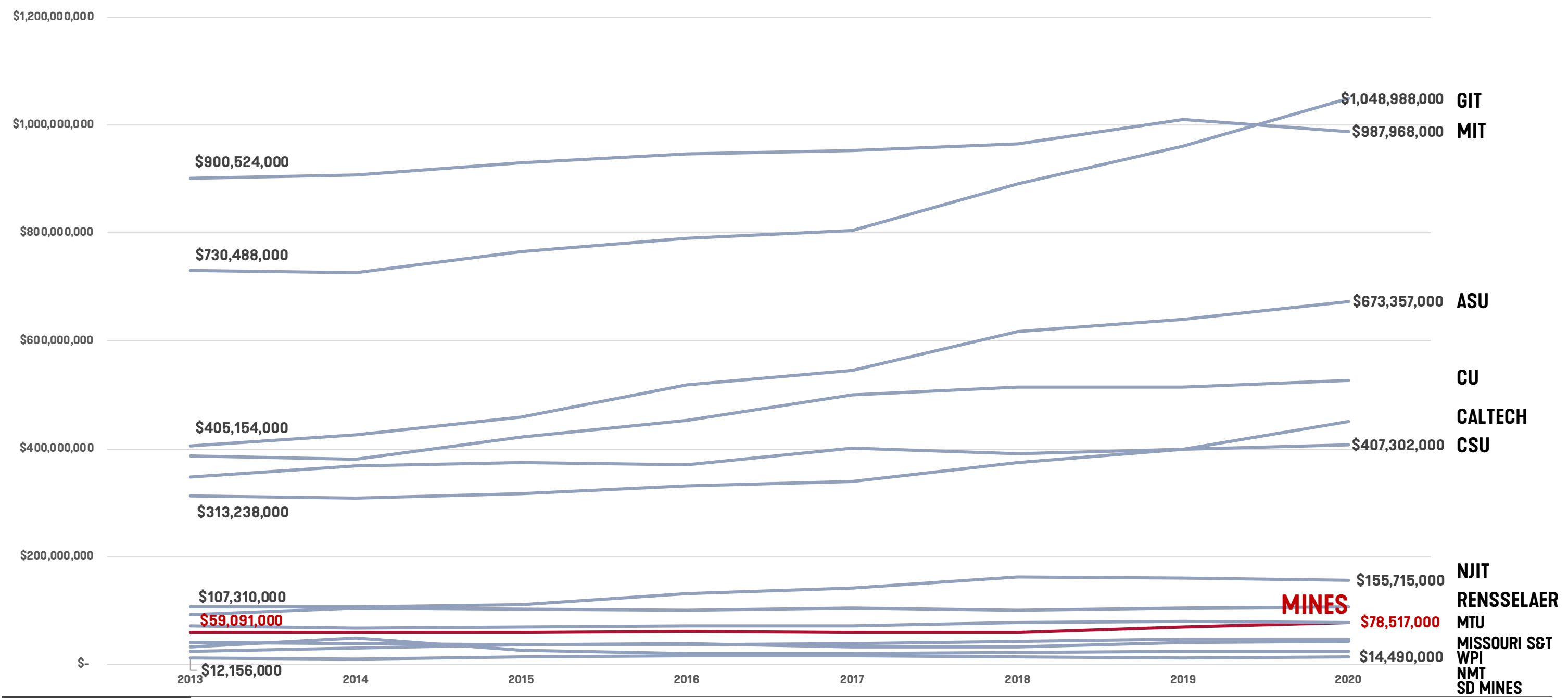
WORCESTER POLYTECHNIC INSTITUTE



UNIVERSITY OF COLORADO

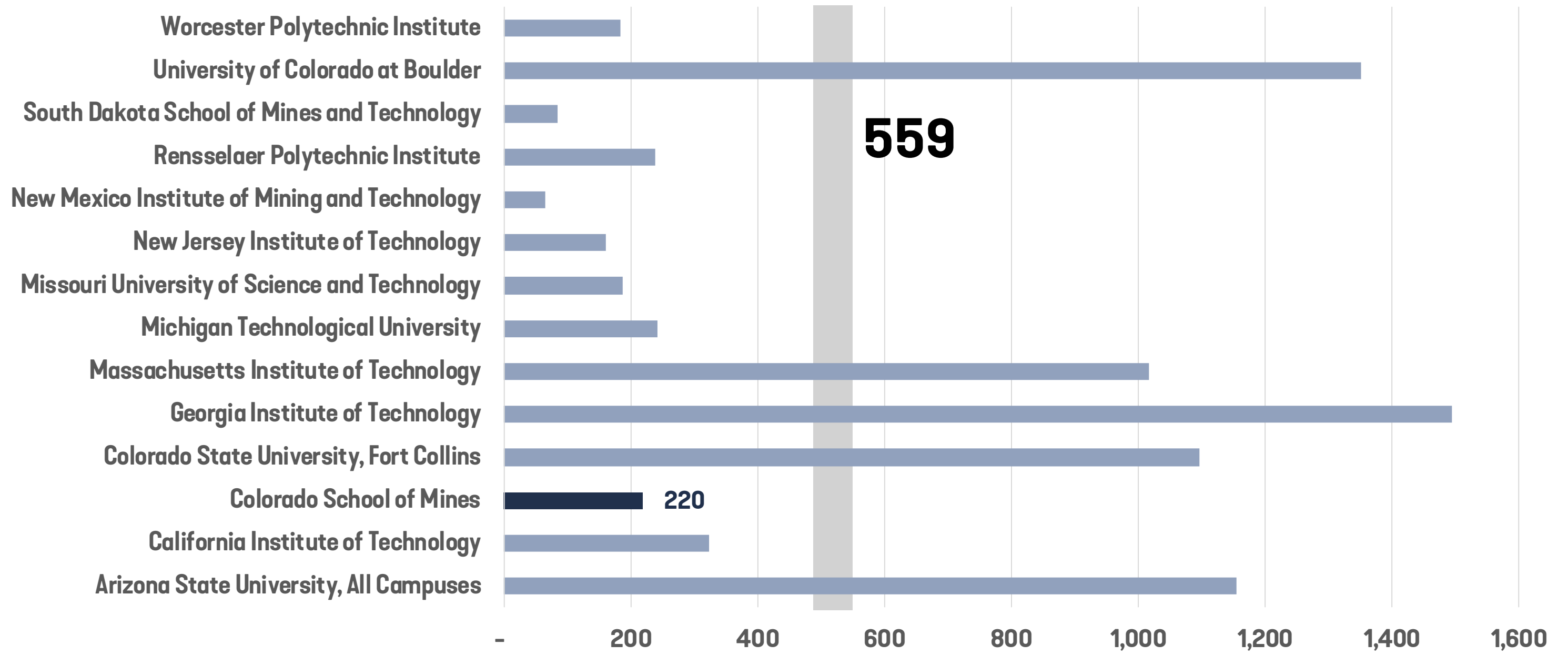
RESEARCH EXPENDITURES BY INSTITUTION

PER NATIONAL SCIENCE FOUNDATION



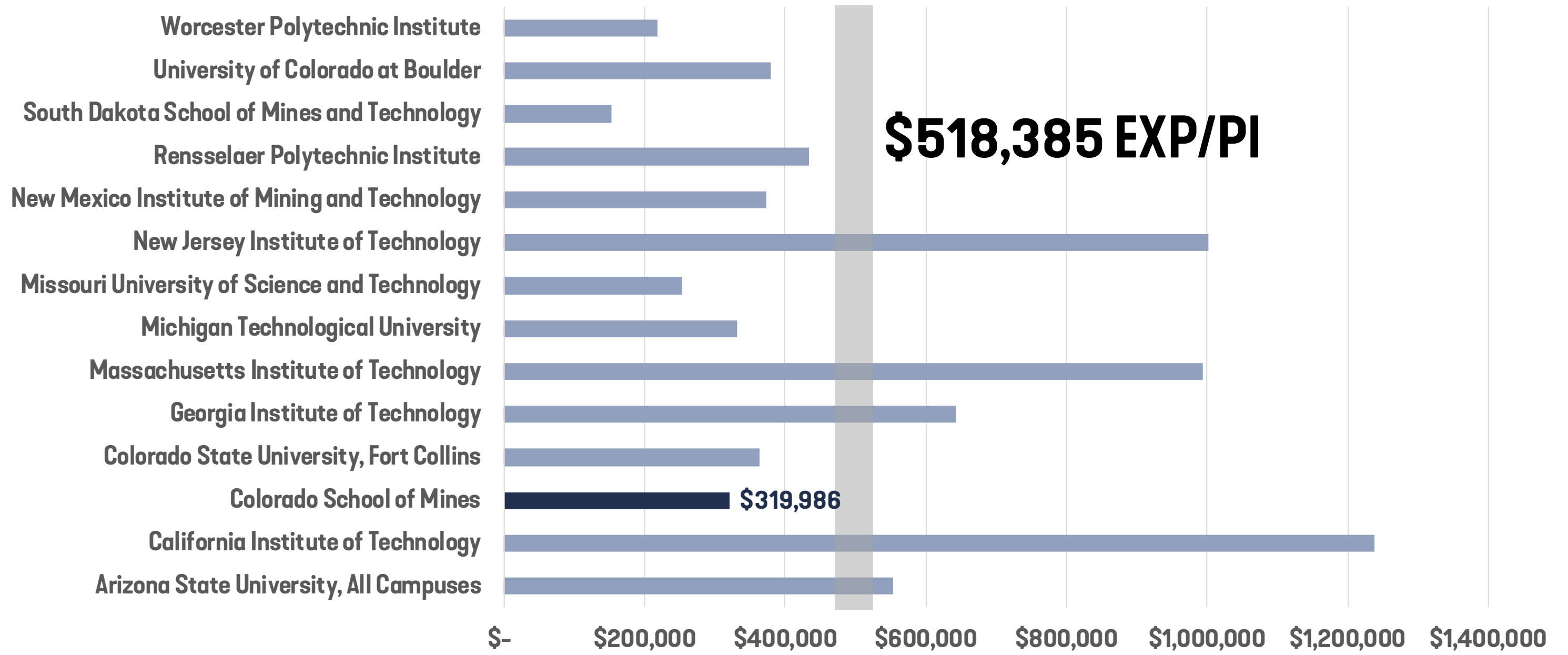
RESEARCH PERSONNEL METRICS BY INSTITUTION

2019 PER NSF, PRINCIPAL INVESTIGATORS



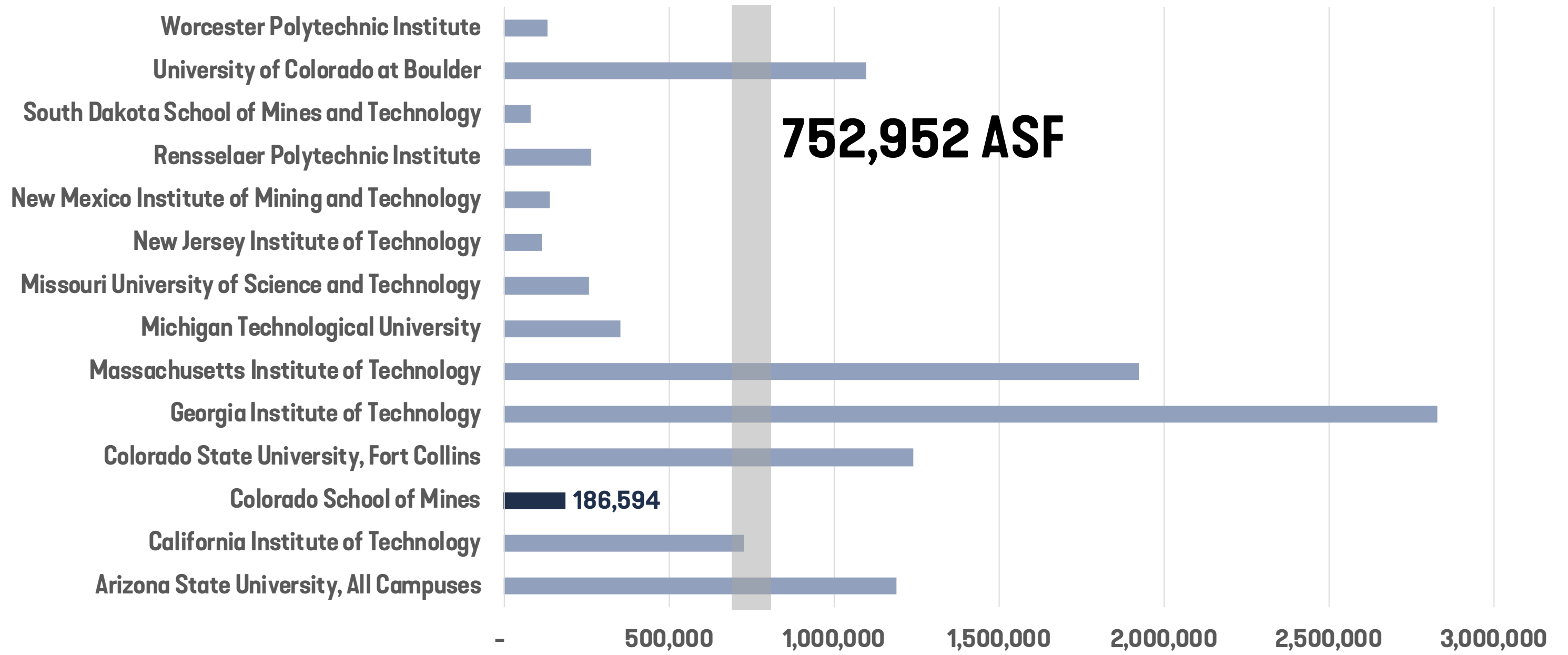
RESEARCH EXPENDITURES PER PI BY INSTITUTION

2019 PER NSF, RESEARCH EXPENDITURES PER PRINCIPAL INVESTIGATOR



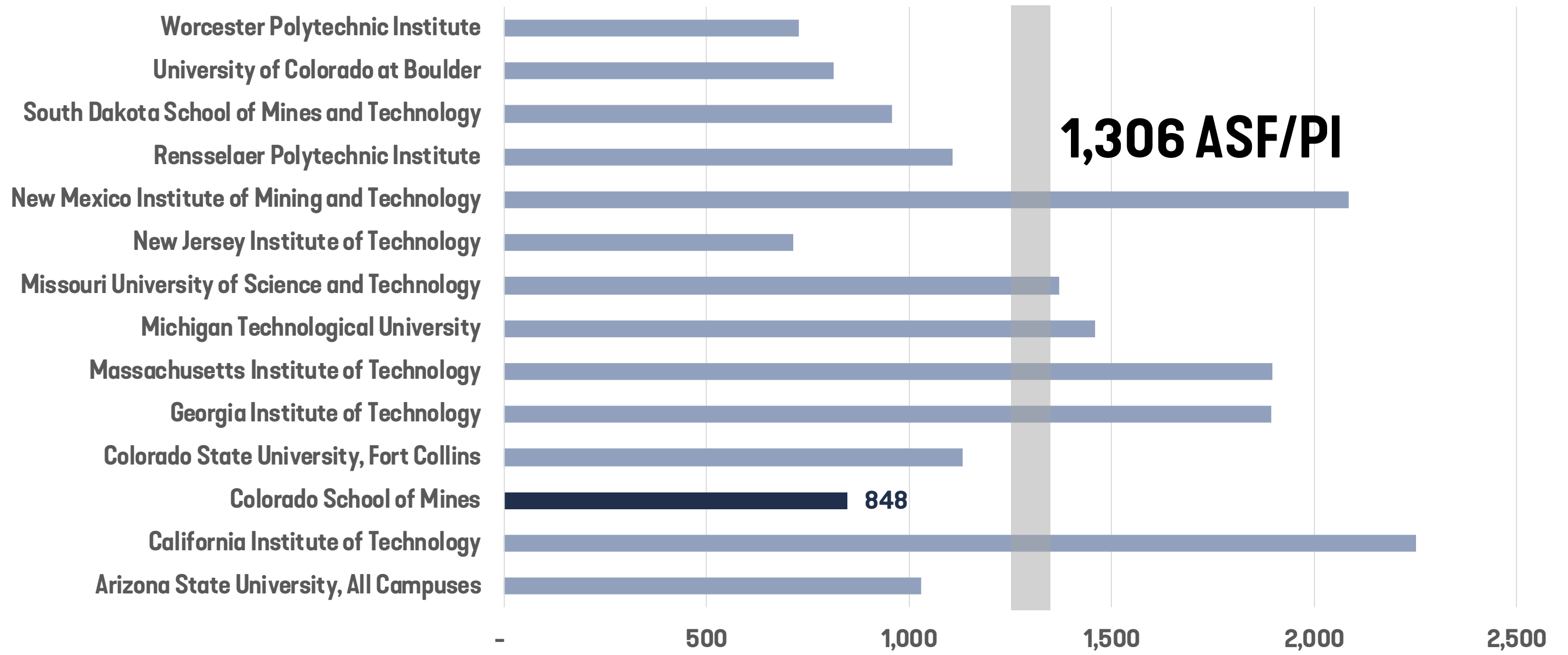
SCIENCE & ENGINEERING RESEARCH SPACE BY INSTITUTION

2019 PER NSF, ASSIGNABLE SQUARE FEET



RESEARCH ASF PER PI BY INSTITUTION

2019 PER NSF, ASSIGNABLE SQUARE FEET PER PRINCIPAL INVESTIGATOR





2022 RESEARCH PROJECTIONS

VARIABLES

PROJECTED TOTAL NSF EXPENDITURES CHANGE PER YEAR

2,6 & 9%

**2017-2021 AVERAGE 5%
RANGE IS -2% TO +17%
FY24 TARGET IS \$100M**

VARIABLES

PROJECTED RESEARCH EXPENDITURES PER T/TT STARTING FY22

\$385k

**2017-2021 AVERAGE \$305K
RANGE IS \$271 TO 348K
INCREASE 2% PER YEAR**

VARIABLES

RESEARCH ASSIGNABLE SQUARE FEET PER T/TT

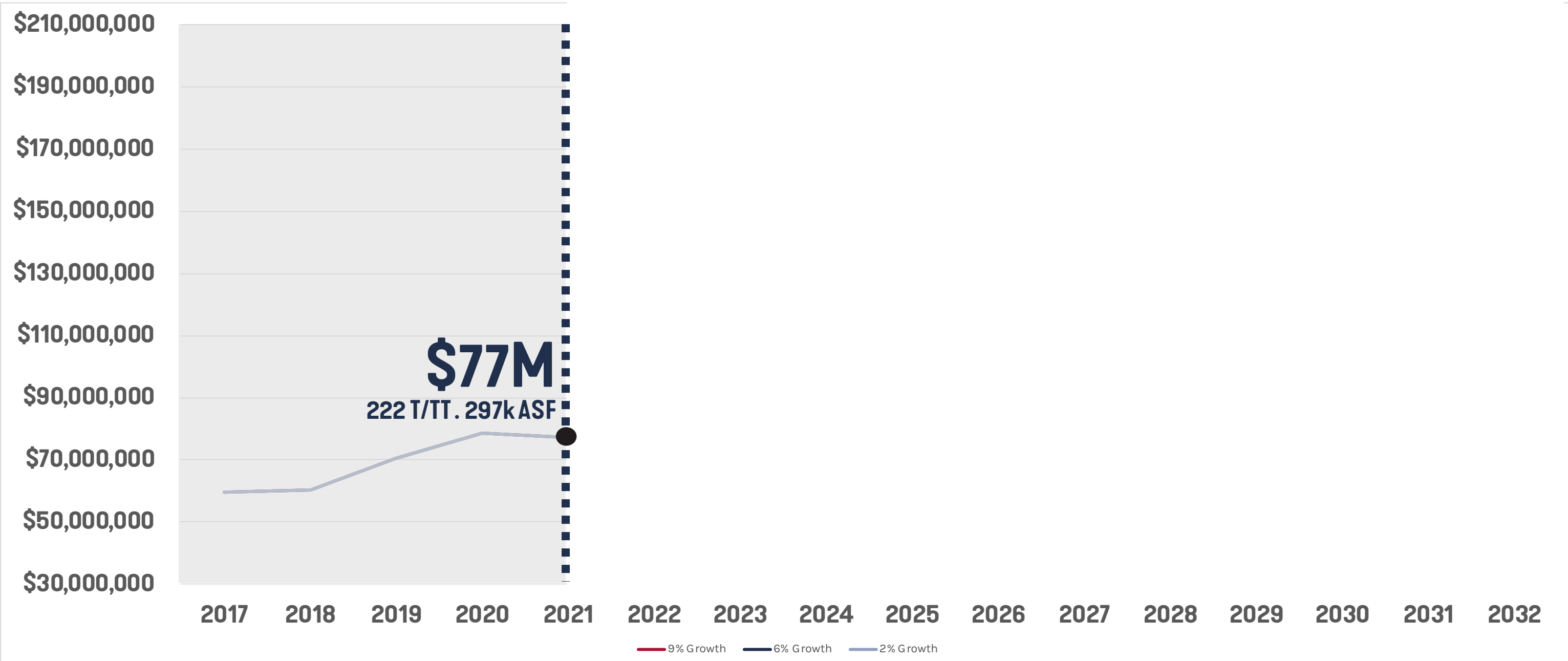
1,339

**2017, 2019, 2021 AVG 943 ASF
RANGE IS 639 TO 1,339 ASF**

RESEARCH EXPENDITURE GROWTH

PER NSF

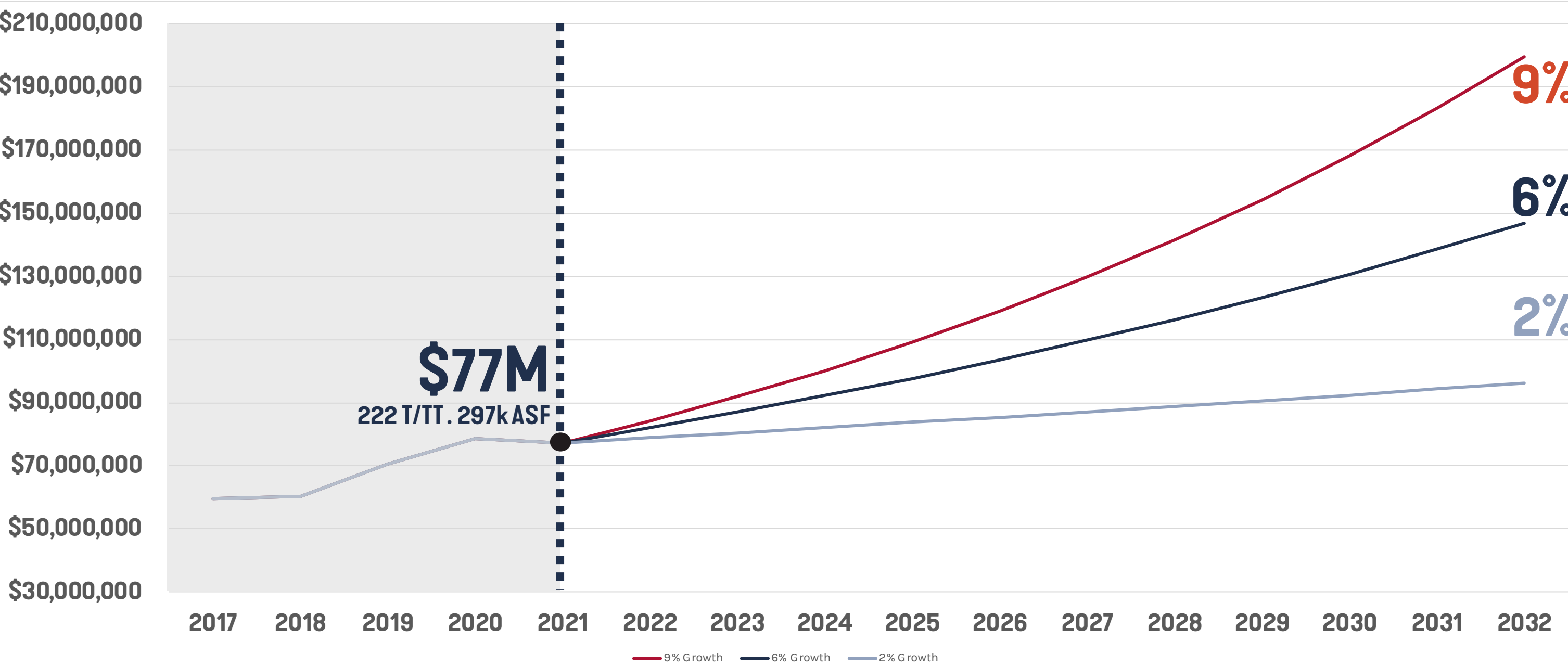
FY21 PER MINES



RESEARCH EXPENDITURE GROWTH

PER NSF

FY21 PER MINES



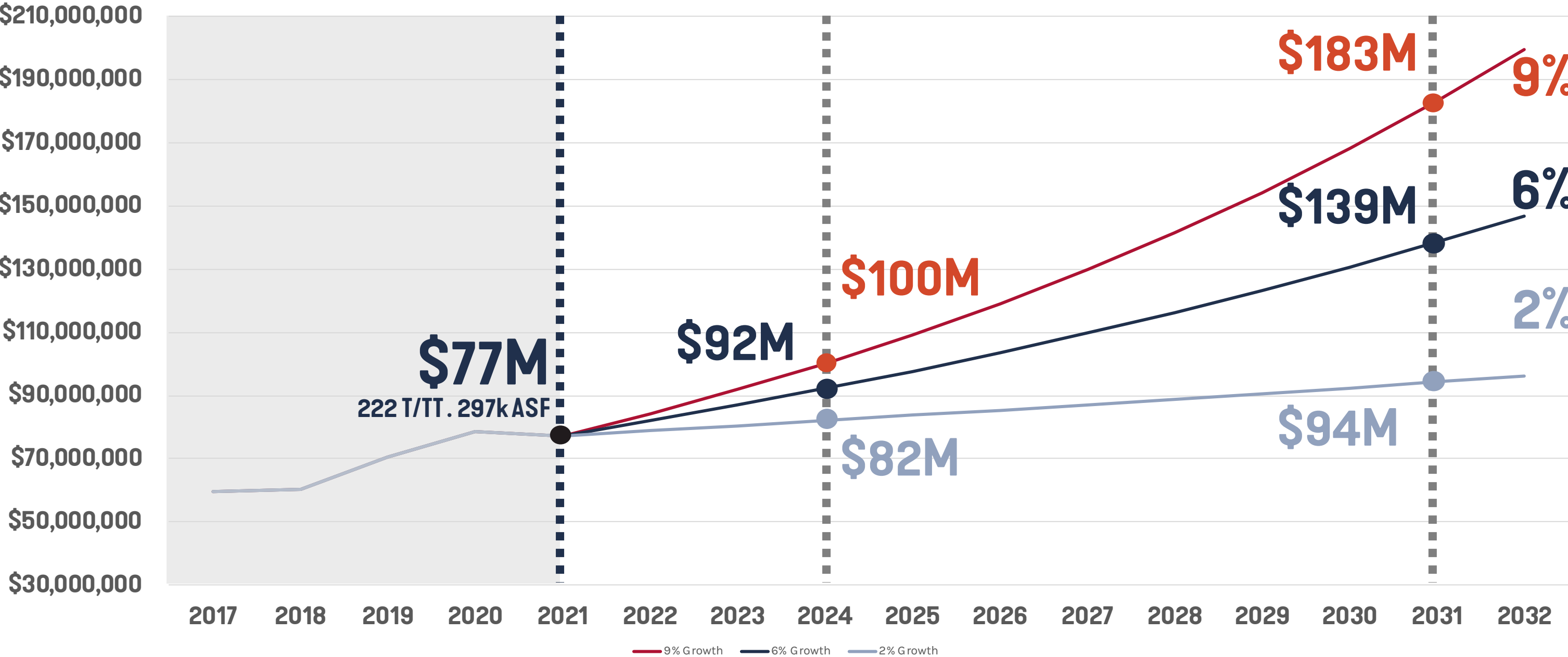
RESEARCH EXPENDITURE GROWTH

PER NSF

FY21 PER MINES

FY24 PROJECTED

FY31 PROJECTED



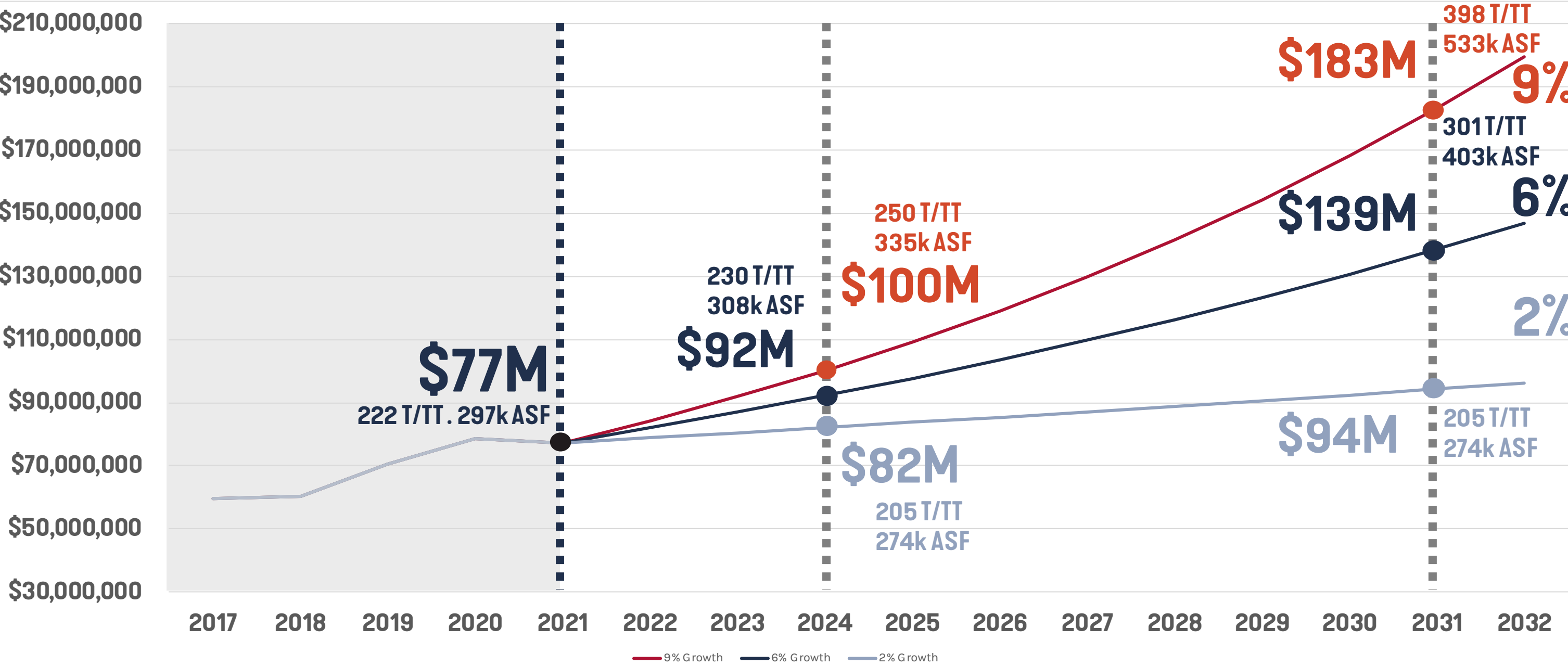
RESEARCH EXPENDITURE GROWTH

PER NSF

FY21 PER MINES

FY24 PROJECTED

FY31 PROJECTED





BUILDING PROJECTIONS

2% GROWTH BUILDING PROJECTIONS

2% PROJECTION MODEL DOES NOT REQUIRE ANY ADDITIONAL SQUARE FOOTAGE IN ORDER TO MEET RESEARCH EXPENDITURE TARGETS

THIS MODEL ACTUALLY REQUIRES LESS ASSIGNABLE SQUARE FOOTAGE THAN THE UNIVERSITY IS CURRENTLY ALLOCATING FOR RESEARCH DUE TO THE HIGHER EXPENDITURES PER T/TT EXPECTATIONS USED IN MODEL.



**EXISTING
RESEARCH ASF**

FY21 RESEARCH SF



**EXISTING
RESEARCH ASF**

NO ADDITIONAL
SQUARE FOOTAGE
REQUIRED

FY24 RESEARCH SF



**EXISTING
RESEARCH ASF**

NO ADDITIONAL
SQUARE FOOTAGE
REQUIRED

FY31 RESEARCH SF

6% GROWTH BUILDING PROJECTIONS

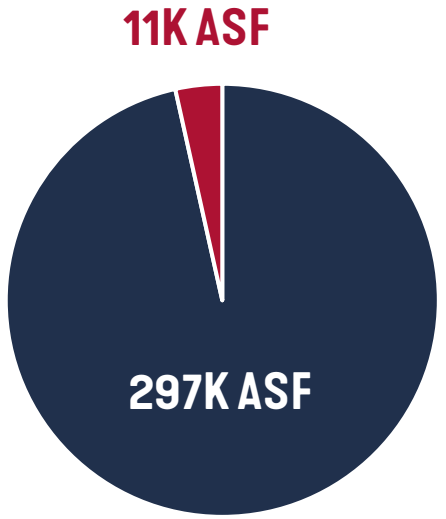
6% MODEL REQUIRES ADDITIONAL SQUARE FOOTAGE TO MEET RESEARCH EXPENDITURE REQUIREMENTS

THIS MODEL WOULD NECESSITATE A SMALL EXPANSION OF EXISTING RESEARCH SF IN ORDER TO MEET FY24 REQUIREMENTS (WHICH COULD BE ACCOUNTED FOR IN THE ERMF PROJECT) AND THEN THE CONSTRUCTION OF A NEW DEDICATED RESEARCH BUILDING BY FY31 FOR FUTURE NEEDS.



EXISTING RESEARCH ASF

FY21 RESEARCH SF

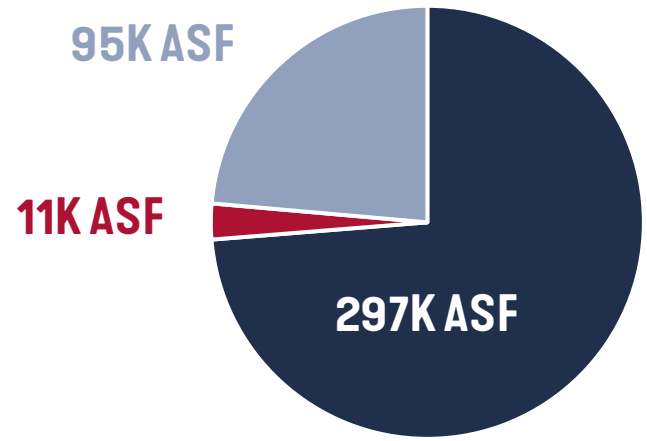


ADD 11K ASF/18K GSF

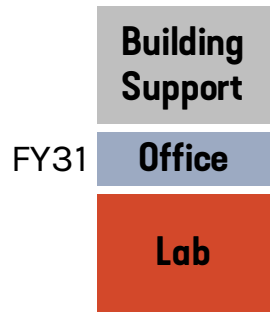


EXPAND RESEARCH BUILDING CAPACITY BY 18,000 GSF TO MEET FY24 DEMAND

FY24 RESEARCH SF



ADD 95K ASF/159K GSF



BUILD ONE NEW FULLY RESEARCH BUILDING OF ~160,000 GSF TO MEET FY31 DEMAND

FY31 RESEARCH SF

9% GROWTH BUILDING PROJECTIONS

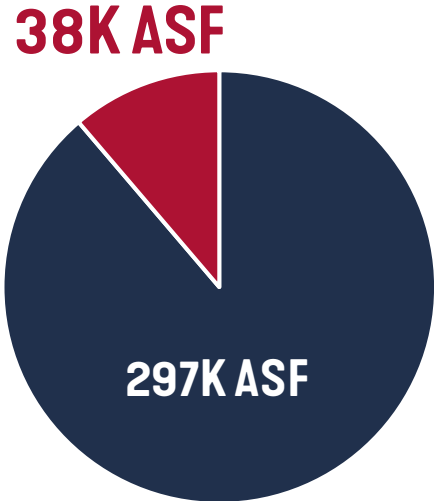
9% MODEL REQUIRES ADDITIONAL SQUARE FOOTAGE TO MEET RESEARCH EXPENDITURE REQUIREMENTS

THIS MODEL WOULD NECESSITATE AN EXPANSION OF EXISTING RESEARCH SF IN ORDER TO MEET FY24 REQUIREMENTS (LIKELY ERMF PLUS AN ADDITIONAL PROJECT) AND THEN THE CONSTRUCTION OF ONE NEW DEDICATED RESEARCH FACILITY BY FY28 AND ANOTHER BY FY31 FOR FUTURE NEEDS.



EXISTING RESEARCH ASF

FY21 RESEARCH SF

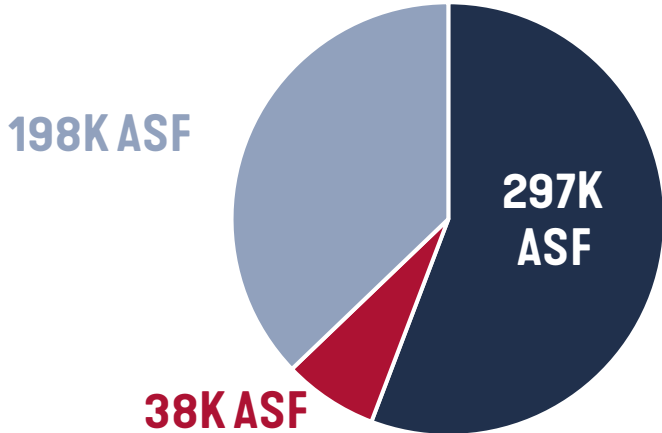


ADD 38K ASF/63K GSF

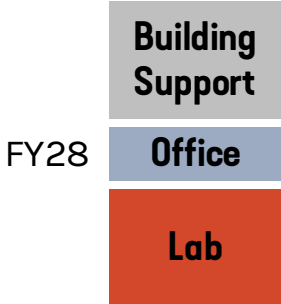


EXPAND RESEARCH BUILDING CAPACITY BY 63,000 GSF TO MEET FY24 DEMAND

FY24 RESEARCH SF



ADD 198K ASF/330K GSF



FY28



FY31

BUILD TWO NEW FULLY RESEARCH BUILDINGS OF ~160,000 GSF TO MEET FY31 DEMAND

FY31 RESEARCH SF