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FISCAL IMPACT REPORT

ORIGINAL DATE 2/18/07

SPONSOR Park LAST UPDATED _____ HB 505/aHEC

SHORT TITLE Increase Math Required for Graduation SB _____

ANALYST Wilson

ESTIMATED ADDITIONAL OPERATING BUDGET IMPACT (dollars in thousands)

| | FY07 | FY08 | FY09 | 3 Year Total Cost | Recurring or Non-Rec | Fund Affected |
|--------------|------|---------|---------|----------------------|-------------------------|------------------|
| Total | | \$753.6 | \$750.0 | \$2,253.6 | Recurring | General Fund |

(Parenthesis () Indicate Expenditure Decreases)

Relates to HB 68 & SB211 and SB561

SOURCES OF INFORMATION

LFC Files

Responses Received From

Department of Finance & Administration (DFA)

Public Education Department (PED)

SUMMARY

Synopsis of HEC Amendment

The House Education Amendment to House Bill 505 changes the starting date for the requirement for four units in mathematics, at least two of which are equivalent to the algebra 1 level or higher for students entering the ninth grade beginning in the 2007-2008 school year to students entering the ninth grade beginning in the 2009-2010 school year.

Synopsis of Original Bill

House Bill 505 will increase from three to four the number of math units needed for high school graduation and decrease the number of electives units for students entering ninth grade in the 2007-2008 school year from seven and one-half to six and one-half. At least two of the four required math units will have to be equivalent to the algebra 1 level or higher.

FISCAL IMPLICATIONS

It is very difficult to determine the costs for the additional math teachers, needed teacher professional development, appropriate additional materials and tutoring for students. There will also be costs associated with creating the new regulations and meeting with teacher and

administrator groups to discuss them.

This new requirement implies about 20% more high school students taking math courses which is about 20,000 students and will require approximately 100 more endorsed math teachers in addition to the current 900. If textbooks for half of those additional students could be available from the regular allocation, if the system finds the needed endorsed math teachers without additional costs and if the only professional development done will be with current resources, then the following costs represent a minimum fiscal implication:

The PED will develop the rules, have them posted in Administrative Code and then teach the implications to teachers, administrators and the general public. Time required for writing, approving and explaining the rules at public hearings will total 100 hours for one Ed Admin A equivalent @ \$25.50 plus benefits (\$3,315); and 10 hours for one Lawyer A @ \$28.76 plus benefits (\$374). Total cost: \$3,689.

New materials for half of the approximately 20% more high school students taking math classes: 10,000 students x \$75/student = \$750,000

Grand total for minimum = \$753,689

SIGNIFICANT ISSUES

The PED provided the following:

Increasing the number of required math classes in high school holds the promise of increased achievement in math and better preparation to begin or study for the many careers that require mathematical knowledge and skills. Twenty years ago the legislature raised the requirement from two to three units. Lessons learned in the past 20 years indicate that the following issues must be considered:

1. Math Preparation of Students Entering High School

Less than 26% of 8th graders entering high schools are proficient in math as measured by the New Mexico Standards-Based Assessment and more than 23% are in the lowest category of “Beginning Proficiency”. On the National Assessment of Educational Progress (NAEP) only 14% show proficiency. Improving math achievement in high school requires continuing efforts to improve teaching and learning of math in Grades PreK-8. High school teachers have traditionally taught only a relatively small percentage of students in the courses of Algebra 1 and beyond. Current methods and materials that seem to work for that small group may need to be revised.

2. Availability of Licensed High School Teachers with a Math Endorsement

With the added credit, more high school math teachers will be needed either by preparing new teachers or instituting programs to have more current teachers add a math endorsement. In 2005-2006 only 38 of 43 candidates passed the secondary math content test of the New Mexico Teacher Assessment (NMTA). In the late 1980s when the requirement was raised from two to three units, the University of New Mexico alone was producing over 30 new high school math teachers every year. Nationally there is about a 15% turnover rate every year and over 25% of high schools report difficulty in hiring qualified math teachers. Some “turnovers” are teachers moving to other schools rather than leaving the profession for a variety of reasons. Since New

Mexico currently has about 900 high school math teachers and a rate of high school math teachers leaving the profession of over 10% that may imply a need for approximately 100 new math teachers every year just to maintain the status quo. If we increase requirements many schools will need to hire additional math teachers both to fulfill regular vacancies and staff more classes. If funds and teachers are not available, class sizes may be increased.

The increased need for math teachers may mean that some current teachers may choose to earn a math endorsement. Adding a math endorsement involves completing 24 credit hours of mathematics, at least 12 of which have to be upper division or passing the New Mexico Teacher Assessment for secondary math. For initial licensure, prospective teachers must both have the 24 credits and pass the test.

3. Appropriate Curricula and Materials for All Students

Many curriculum materials for mathematics are targeted at the relatively small percentage of students who have traditionally done well in high school mathematics and very few have been specifically designed for working with students of all proficiency levels. Materials for students who are not prepared for the rigors of Algebra 1 and beyond are now being targeted with some materials, many of which are computer or online-based.

4. Professional Development for Current and New High School Math Teachers

To be able to use new materials and methodology to work successfully with students who have below-proficient levels of math knowledge and skills in courses of increased rigor implies the need for more professional development and follow-up support. The federally funded Math and Science Partnerships (MSP) and state-funded Summer Academies provided professional development for approximately 75 high school math teachers. The total funding for those two programs has been approximately \$2,500,000, but heavily targeted at middle schools.

DFA provided the following:

This bill seeks to increase the required number and rigor of required math courses for high school graduates by increasing the minimum graduation requirements for students entering grade 9 in the 2007-08 school year. Currently, New Mexico's high school students are required to take a minimum of three units in math, with at least one unit being equivalent to algebra 1 or higher. This bill will amend 22-13-1.1. (F) 2 to require that students entering grade 9 in the 2007-08 school year take a minimum of four years of math, with at least two of those units being equivalent to algebra 1 or higher. Operationally, this will mean that high school students will need to take math for all four years of high school, and two of those courses will most likely be algebra 1 and geometry, or algebra 1 and algebra 2.

This bill is one of multiple pieces of legislation that have been introduced thus far in the 2007 legislative session tackling the issue of increasing the graduation standards. In math, in order to earn a NM Diploma of Excellence, students will be required to take four units of math, at least one of which is algebra 2. SB-481 will amend 22-12-2 NMSA 1978 to require that beginning in grade 9, high school students will not advance grades or graduate without attending classes for a minimum of 90% of the school year. Given the many proposals for amending graduation requirements that have been submitted, it is clear that increasing graduation requirements for high school students is a priority for New Mexicans.

In the last few years, there has been significant attention on the quality of schools, and the readiness of the nation's high school graduates for the world of postsecondary education and work. The world of work is changing, and the demand for highly skilled employees is increasing. In a recent national study commissioned by Achieve, 41% of employers surveyed indicated that they felt high school graduates were not adequately prepared in math. In that same study, 39% of college students and high school graduates indicated that they felt that they had gaps in the skills required for today's job market. Only 24% of those students indicated that they faced high expectations and were challenged in high school.

New Mexico faces the same challenges as the nation in preparing students for postsecondary education, but on a more acute scale. While nationally, 28% of high school graduates require remedial coursework in higher education, a 2006 study by the Office of Education Accountability found that in New Mexico, 49% of high school graduates need remedial help. As New Mexico works to build a viable, high wage economy, increasing the skills of our high school graduates is crucial.

HB 505 seeks to increase the required number and rigor of required math courses for high school graduates by increasing the minimum graduation requirements for students entering grade 9 in the 2007-08 school year. Currently, New Mexico's high school students are required to take a minimum of three units in math, with at least one unit being equivalent to algebra 1 or higher. HB-505 will amend 22-13-1.1. (F) 2 to require that students entering grade 9 in the 2007-08 school year take a minimum of four years of math, with at least two of those units being equivalent to algebra 1 or higher. Operationally, this will mean that high school students will need to take math for all four years of high school, and two of those courses will most likely be algebra 1 and geometry, or algebra 1 and algebra 2. The bill also reduces the number of elective units available to students entering grade 9 in the 2007-08 school year by one to balance the new math requirement.

HB 505 is one of multiple pieces of legislation that have been introduced thus far in the 2007 legislative session tackling the issue of increasing the graduation standards. HB 68 & SB 211 the High School Reforms Act and SB-561, High School Redesign, have proposed the New Mexico Diploma of Excellence, which will effectively increase graduation requirements in many content areas, not just math. In math, in order to earn a Diploma of Excellence, students will be required to take four units of math, at least one of which is algebra 2.

One caution with increasing graduation requirements is that simply increasing the number of courses students are required to take does not automatically translate into a more rigorous curriculum. Algebra 1 can be placed on any child's transcript without any guarantee about the content taught or learned. Education Commission of the States suggests in a January 2006 policy brief that in order to ensure that students are receiving a more challenging curriculum, increased graduation requirements should be implemented in conjunction with:

- Diagnostic assessments used to identify a student's mastery of content prior to instruction;
- End-of-course exams to assess students' mastery of the content and skills contained in each course;
- Requiring students to demonstrate proficiency in the subject matter as defined through the State academic standards, through assessments, projects, portfolios or other means;

- Professional development for teachers to ensure that teachers have the breadth and depth of knowledge in the content areas needed to ensure student mastery; and
- Support for struggling students. Student success is not guaranteed with high expectations alone—students also need high levels of support to ensure that they are able to meet those expectations.

It is important that any change in graduation requirements consider these programmatic supports to ensure that students are able to reach higher expectations and be successful. Without these additional supports, New Mexico cannot be assured that a change in graduation requirements will lead to better outcomes for New Mexico’s students.

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ADMINISTRATIVE IMPLICATIONS

The PED will develop the rules, have them posted in the Administrative Code and then teach the implications to teachers, administrators and the general public.

CONFLICT, DUPLICATION, COMPANIONSHIP, RELATIONSHIP

HB 68 & SB211 the High School Reforms and SB561, High School Redesign, have proposed the New Mexico Diploma of Excellence, which will effectively increase graduation requirements in many content areas, not just math.

OTHER SUBSTANTIVE ISSUES

PED notes that the provisions of this bill requires that only two of the four units to be at the Algebra 1 level or higher, there is the implication that for some students the other two courses can be at a lower level. Careful consideration must be given to these courses so that they prepare students for the Algebra 1 level courses and do not simply repeat instructional practices that were not successful with many students in the past.

DW/mt