Maximizing the Share of Highly Effective Teachers in High-Poverty Schools

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DISCLAIMER

The author conducted this study a part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfilment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other entity.

In addition, the numbers reported in this paper may be different than DCPS official statistics due to alternative business rules.

HONOR STATEMENT

On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

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UNIVERSITY of VIRGINIA

FRANK BATTEN SCHOOL of LEADERSHIP and PUBLIC POLICY

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GLOSSARY OF TERMS, ABBREVIATIONS AND ACRONYMS

AFT	American Federation of Teachers
ESSA	Every Student Succeeds Act
ELA	English Language Arts
DCPS	District of Columbia Public Schools
CS	Comprehensive Support and Improvement Schools
CSC	Commitment to the School Community
FRPL	Free and Reduced-Price Lunch
IVA	Individual Value-Added Student Achievement Data
LEA	Local Education Agency
LEAP	LEarning together to Advance our Practice
OSSE	Office of the State Superintendent of Education
NBCT	National Board Certified Teacher
NBPTS	National Board for Professional Teaching Standards
NYCDOE	New York City Department of Education
PARCC	Partnership for Assessment of Readiness for College Careers
PFP	Pay for Performance
SBPP	School-Based Performance Pay
SEL	Social Emotional Learning
SIG	School Improvement Grant
SNAP	Supplemental Nutrition Assistance Program
SRB	Selective Retention Bonus
STAR	School Transparency and Reporting
SVA	School Value-Added Student Achievement Data
TANF	Temporary Assistance for Needy Families
TLF	Teaching and Learning Framework
TS	Targeted Support and Improvement Schools
UFT	United Federation of Teachers
WTU	Washington Teachers' Union

The key terms and phrases used in this report are defined here:

Comprehensive Support and Improvement Schools (CS): There are two types; Type I and Type II. Type I are Title I schools that score in the bottom 5% of the total number of points on the STAR Framework as compared to their peers. Type II are high schools in which both four-year and five-year adjusted cohort graduation rates fall below 67%. This is established by the Every Student Succeeds Act (ESSA).

Group 1: Teachers who teach grades 4+ and have individual value-added student achievement and student survey data incorporated in their evaluation score.

Group 1a: LEAP leaders who teach grades 4+ and have individual value-added student achievement and student survey data incorporated in their evaluation score.

High-Poverty School: At DCPS, high-poverty schools have 40% or more students that receive FRPL. Nationally, schools are considered high-poverty schools if 75% of more students receive FRPL.

Highly Effective: A teacher at DCPS is rated "Highly Effective" if they receive an IMPACT score of 350 or higher.

IMPACT: A comprehensive evaluation and compensation system that administers rewards and sanctions based on teacher performance.

IMPACTplus: A performance-based compensation system for teachers who earn a final IMPACT rating of Highly Effective.

Low-Poverty School: At DCPS, low-poverty schools have 39% or less students that receive FRPL. Nationally, schools are considered low-poverty schools if 25% or less student receive FRPL.

Local Education Agency (LEA): An entity that operates public elementary and secondary schools. DCPS is its own LEA. Each LEA creates its own set of policies and ensures the implementation of federal and state policies.

National Board Certified Teacher (NBCT): Teachers who go through a certification process in addition to their current teaching licensure organized by the NBPTS.

National Board for Professional Teaching Standards (NBPTS): An independent, nonprofit organization working to improve teacher quality for all students.

Office of the State Superintendent of Education (OSSE): The official State Education Agency (SEA) for the District of Columbia. OSSE provides information, policy guidance, resources, and technical assistance on educational matters to LEAs and parents.

Pay for Performance (PFP) program: PFP or merit pay for teachers comes in two forms: (i) an annual salary increase, where performance-based compensation becomes a permanent part of a teacher's base salary, and (ii) an annual bonus, where a teacher is awarded money for performance and must re-earn the bonus each year.

School-Based Performance Pay (SBPP): Financial incentives are given to all school employees when school-wide goals are met or exceeded. School-based performance pay can also include funds for school resources (supplies, trainings, infrastructure).

Selective Retention Bonus (SRB): SRBs are bonuses given to teachers for teaching a hard-to-teach subject or teaching at a hard-to-staff school.

Targeted 40 Schools: Targeted 40 schools are the 40 lowest performing, high-poverty schools in DCPS (See Appendix B).

INTRODUCTION

EXECUTIVE SUMMARY

At District of Columbia Public Schools (DCPS) the gap between the share of Highly Effective teachers at the lowest performing, high-poverty schools and low-poverty schools is about 19 percentage points. Studies show that many teachers at high-poverty schools have less experience and lower value-added estimates of effectiveness, which can result in negative student outcomes. Compensation methods such as pay for performance (PFP), school retention bonuses (SRBs) and school-based performance bonuses (SBPP) have been successful in attracting and retaining Highly Effective teachers at high-poverty schools to improve student achievement. The cost of compensation reform, however, is high and growing. Through IMPACT, DCPS' comprehensive teacher evaluation system and bonus program, DCPS spent $16 million on teacher bonus payouts in school year 2017-18 and is anticipated to spend $23 million by the 2021-22 school year. These costs are well over DCPS' budgeted amount of $15 million. *Should cost trends continue, IMPACT is financially unsustainable to continue to maximize the share of Highly Effective teachers at high-poverty schools.*

This analysis focuses on compensation alternatives within IMPACT that will maximize the share of Highly Effective teachers in high-poverty schools at DCPS while minimizing costs[1]. These four alternatives include:

1. Maintain Current IMPACT Bonus Structure (Status Quo)
2. Restructure Bonus Payouts for High-Poverty Schools
3. School-Based Performance Award System for Comprehensive and Improvement Schools (CS)
4. Add-On Bonus for National Board Certified Teachers (NBCT)

This report evaluates each alternative with respect to four criteria: (1) cost; (2) effectiveness at maximizing the share of Highly Effective teachers; (3) political viability; and (4) fairness/equity. After evaluation, it is recommended that DCPS maintain the current IMPACT bonus structure (status quo) while simultaneously working to phase-in add-on bonuses for NBCTs to maximize the share of Highly Effective teachers in high-poverty schools.

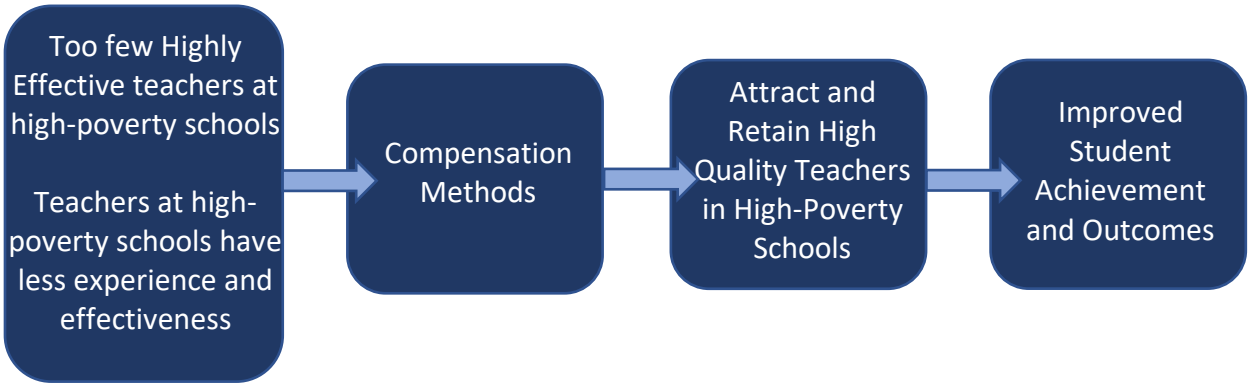
The final section of this report addresses the implementation of both short-term and long-term recommendations. Both recommendations are relatively low-cost, sufficiently maximize the share of Highly Effective teachers, have strong stakeholder support and prioritize high-poverty schools. These recommendations will allow DCPS to further analyze current IMPACT trends as well as reward teachers for receiving additional certification. This section will also address how the recommendations will be implemented and challenges DCPS may face in the process.

[1] At DCPS, teachers and staff members are assessed according to their specific roles and responsibilities. Each type of teacher and staff member is categorized by a certain group (See Appendix A). Due to the complexity of the IMPACT evaluation system, this report will solely focus on teachers at DCPS (groups 1-7). In addition, teachers receive bonuses only when they return the following year. Therefore, this analysis will focus on teacher retention as a measure for maximizing the share of Highly Effective teachers.

PROBLEM STATEMENT

There are too few Highly Effective teachers in high-poverty schools at DCPS. In school year 2016-17, 33% and 40% of teachers were rated Highly Effective in Targeted 40[2] and high-poverty[3] schools respectively compared to 57% in low-poverty schools. The following year, the share of Highly Effective teachers increased in all schools, however the gap between high- and low-poverty schools remain consistent (see Figure 1). A growing literature finds that majority of teachers in high-poverty schools have less experience, unsatisfactory academic records (Almy & Theokas, 2010; Clotfelter, Ladd & Vigdor, 2006; Lankford, Loeb & Wyckoff, 2002; Mayer, Moore & Mullens, 2000), and low value-added estimates of effectiveness (Goldhaber, Lavery, & Theobald, 2015) compared to teachers at low-poverty schools. Specifically, studies show that teacher effectiveness is one aspect that is critical to improving long-run student outcomes such as lifetime earnings, college attendance and quality of neighborhood in adulthood (Chetty et al., 2011). Since the 1980s, U.S school districts and states have used a variety of compensation reforms to improve teacher quality, retention and overall student outcomes in high-poverty schools (Springer, 2009; Kelley and Odden, 1995).

THEORY OF CHANGE

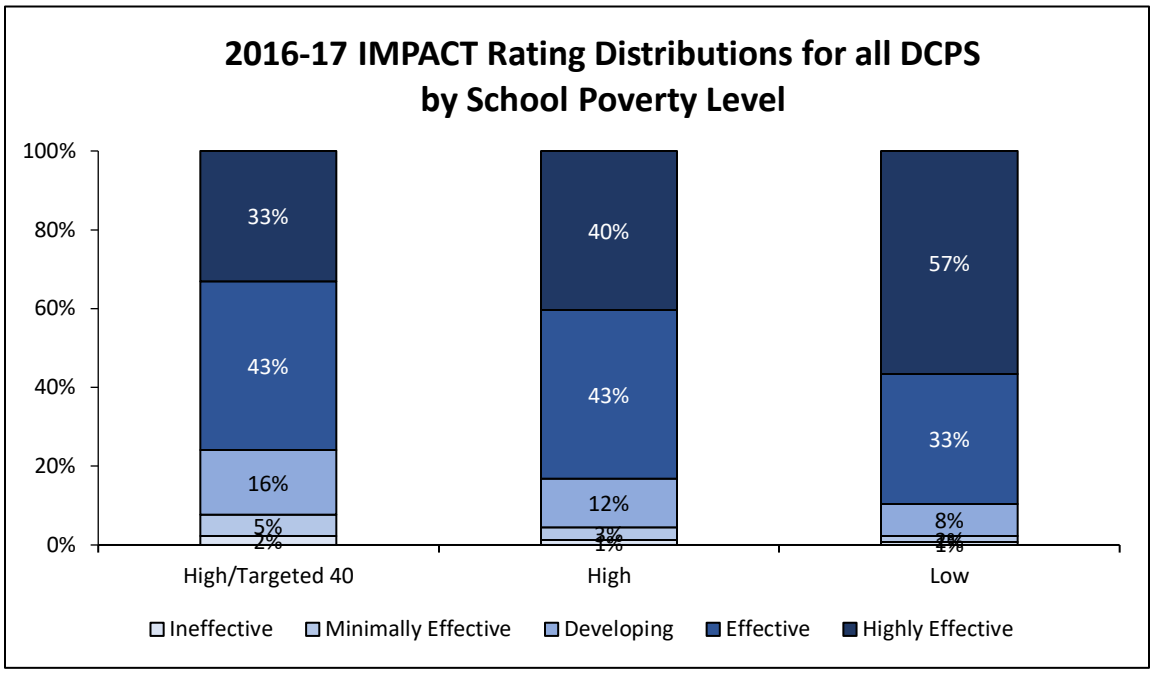


The cost of compensation reform is very high and growing – stressing the need for low-cost solutions to maximize the number of high quality teachers in high-poverty schools. DCPS implemented a program called IMPACT in 2010 to financially compensate high-performing teachers. Specifically, Highly Effective teachers in high-poverty schools can receive an additional $10,000 bonus for a total up to $25,000. As IMPACT expanded from 2010 to 2017, spending also increased. For the 2011-12 school year, DCPS spent $6.7 million on bonus payouts. By the 2017-18 school year, DCPS spent over $16 million. With this linear payout trend, DCPS could be spending about $23 million on IMPACT bonuses for teachers by school year 2021-22 (see Figure 2). **This trajectory is financially unsustainable as DCPS spends well over their allocated budget.** *To continue to maximize the share of highly effective teachers in high-poverty schools, DCPS must consider low-cost, effective, politically viable and fair compensation alternatives.*

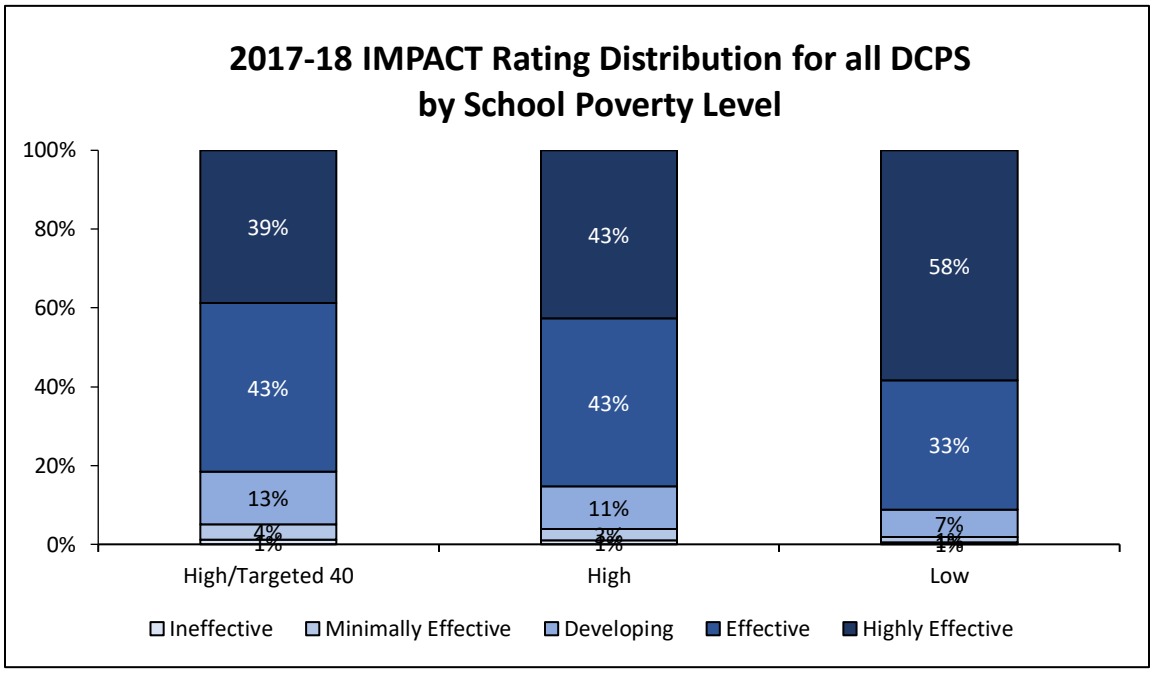
[2] Targeted 40 schools are the 40 lowest performing, high-poverty schools in DCPS (See Appendix B)

[3] At DCPS High Poverty Schools have 40% or more students receive FRPL. Nationally, schools are considered high-poverty schools if 75% of more students receive FRPL.

FIGURE 1:

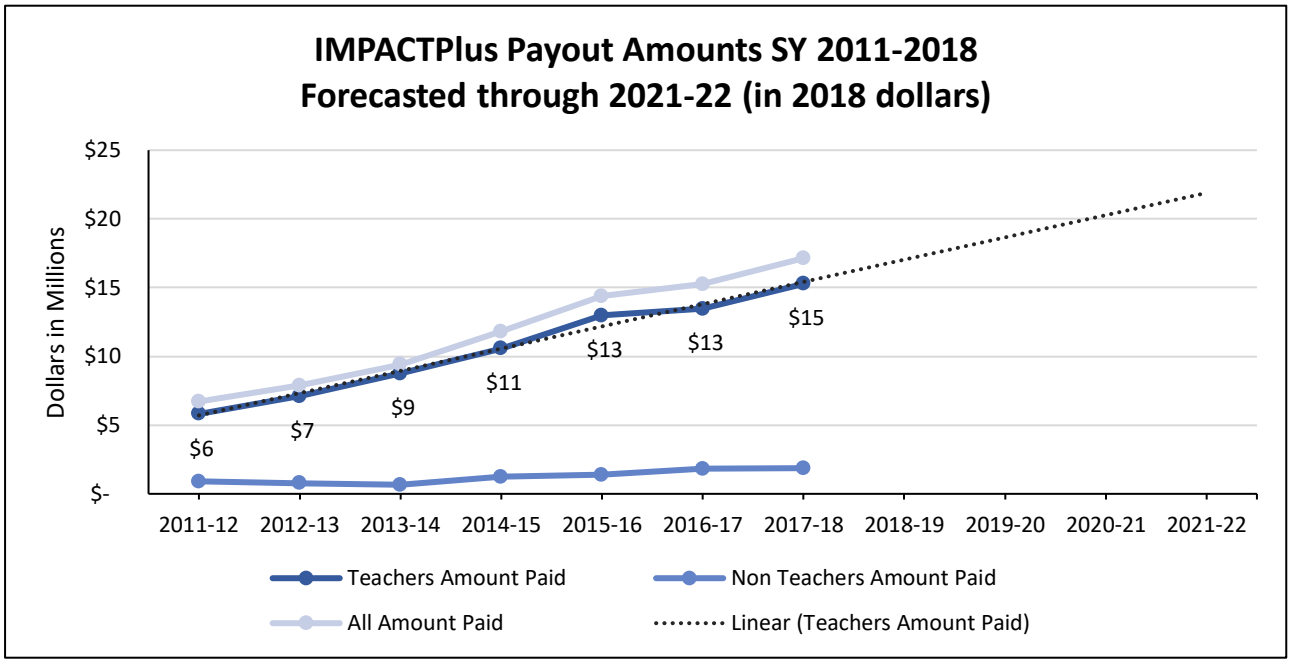


Source: DCPS IMPACT Final Ratings from School Year 2016 - 2017



Source: DCPS IMPACT Final Ratings from School Year 2017 - 2018

FIGURE 2:



Source: DCPS IMPACT Bonus Payouts from School Year 2011 - 2018[4]

[4] Note: These are forecasted trends for the next 5 years. Under the assumption that 100% Highly Effective Teachers is not likely, trends may plateau after 5 years.

BACKGROUND

CONTEXT

It is important to understand the context for this analysis as this determines the operational, economic, and political framework in which all compensation alternatives must be evaluated.

District of Columbia Public Schools (DCPS)

Majority of students at DCPS are economically disadvantaged and are students of color (see Figure 3). Like many urban school districts, DCPS also has low student proficiency rates and low graduation rates. In 2015, 25% of students were proficient in ELA and 21% proficient in Math. By 2018, proficiency rates increased to 35% and 31% respectively. Graduation rates also increased from 53% in 2011 to 70% in 2017 (DCPS, 2018b). In addition to this improvement, DCPS has a modest retention rate of Effective and Highly Effective rated teachers (92% in 2017-18) Overall, DCPS has been making strides to improve student achievement through teacher quality. Their teacher evaluation system is a huge driver for these improvements.

FIGURE 3: Student Demographics (2016-17)

	DCPS	DC (DCPS and Public Charter)	National Public Schools
White	15%	10%	48%
Black	60%	68%	15%
Hispanic	20%	18%	27%
Asian/Multi-Racial/Other	5%	4%	10%
Disadvantaged	77%	80%	-
English Learners (EL)	14%	10%	10%
Special Education	14%	16%	13%
Total Students	48,336	91,537	50.7 million

Source: DCPS, OSSE and the National Center for Education Statistics (NCES)

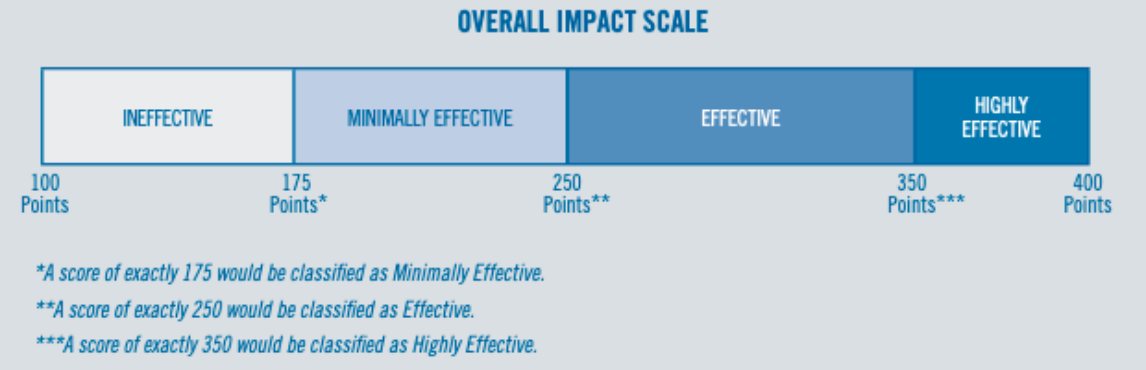
IMPACT - Teacher Evaluation System

In 2009, Chancellor Michelle Rhee wanted to improve and increase standards for teacher quality at DCPS. She believed that teachers played a critical role in improving student achievement. Rhee partnered with Kaya Henderson, former Teach for America D.C Director and Jason Kamras, former Teach for America teacher. Together, they established expectations in planning and preparation, classroom environment, instruction, and professionalism through a teacher evaluation system called IMPACT (Toch, 2018).

When IMPACT was first established in 2010, teacher evaluation scores were based on a variety of components that varied based on the type of teacher. Some of these components included Individual Value-Added Student Achievement data (IVA), observations by administrators and master educators from central office, meeting standards from the Teaching and Learning Framework (TLF), School Value-Added Achievement Data (SVA) and professionalism

requirements. Each component also carried different weights depending on the type of teacher. Teachers also lost points for arriving to school late or having unexcused absences. Once the evaluation score is calculated and weighted, final ratings are determined under a 4-category scale (see Figure 4). In addition, Effective teachers progressed normally on their pay schedules while Highly Effective teachers became eligible for additional compensation under the Washington Teachers' Union (WTU) contract.

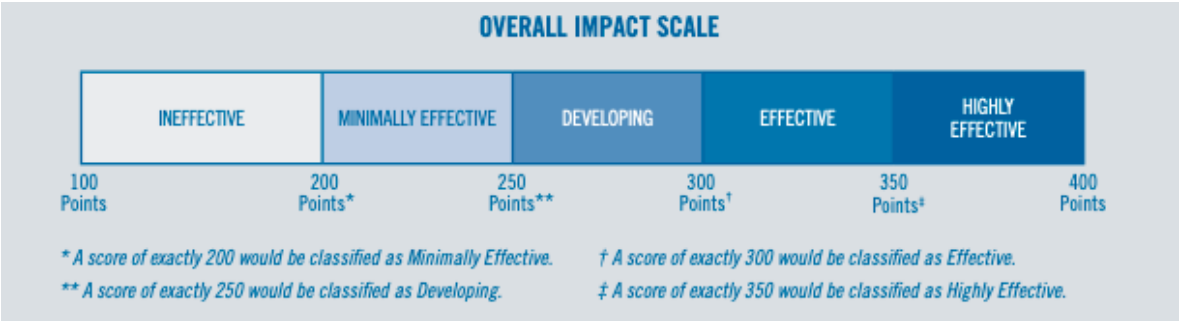
FIGURE 4: SY 2010-11 IMPACT RATING SCALE



Source: DCPS 2010-11 IMPACT Guidebook

From 2013-2017, DCPS reformed IMPACT in a variety of ways. Today, teacher evaluation scores still consist of a multiplicity of components with varying weights depending on the type of teacher (See Appendix A for types of teachers). Some of these components include Teachers-Assessed Student Achievement Data (TAS), Student Survey Data (SSP), IVA and Commitment to School Community (CSC). After component scores are calculated, teachers receive IMPACT ratings under a 5-category scale (see Figure 5). Teachers who receive Ineffective or consecutive Minimally Effective ratings are terminated from DCPS. Effective and Highly Effective teachers that remain in the system receive incentives the following year for their excellent performance.

FIGURE 5: SY 2017-18 IMPACT RATING SCALE



Source: DCPS 2017-18 IMPACT Guidebook

IMPACTplus – Financial Incentives

In 2012, Henderson and Kamras created *IMPACTplus* which provides financial incentives for returning Highly Effective teachers, with a strong focus on teachers in high-poverty schools. Currently through *IMPACTplus,* Highly Effective teachers at low-poverty schools receive an annual bonus of up to $3,000, teachers at high-poverty schools receive up to $15,000, and teachers at Targeted 40 schools receive up to $25,000 (see Figure 6). After several years of implementation and research, these bonuses helped increase teacher retention from 75% in 2011-12 to 83% in 2016-17 and further improved the performance of already high-performing teachers (Tosh, 2018; Dee & Wyckoff, 2013).

FIGURE 6: SY 2017-18 IMPACT BONUS PAYOUT

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR ADD-ON IF YOU ARE IN ONE OF THE 40 TARGETED SCHOOLS	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	Additional $10,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	n/a	$3,000

Source: DCPS 2017-18 IMPACT Guidebook

IMPACT Spending and Funding

As IMPACT expanded from 2010 – 2017, spending for bonus payouts also increased. For the 2011-2012 school year, DCPS spent $6.7 million. By the 2017-18 school year, DCPS spent over $16 million. Bonus payouts also varied based on school poverty level. In 2017-18, DCPS spent $927,500 on bonus payouts in low-poverty schools, $7 million in high-poverty schools and about $9 million in Targeted 40 schools. According to the 2018 Budget Development guide, DCPS allocates $15 million per year on IMPACT bonuses and spends well over that amount.

Throughout the development process, DCPS applied for various funding streams in addition to current local funds. DCPS received funding from an ample of private donors and foundations such as the D.C Public Education Fund and the Bill and Melinda Gates foundation. DCPS also received 5-year federal funding grants from Race to the Top in 2010 and the Teacher Incentive Fund in 2012. These grants provided DCPS with a total of $137 million from 2010 – 2017 (Tosh, 2018). Currently, performance-based bonuses to teachers and school-based staff are funded solely through federal and local funds. Local funding is determined by the Uniform Per Student Funding Formula (UPSFF) and enrollment levels. This formula is determined per student and is adjusted each year for inflation (Council of the District of Columbia, 2018). For example, in the 2014-15 school year, the foundation level was about $9,000 per student with adjustments based on grade level. DCPS also receives federal funding from Title I grants based on the number of students eligible for FRPL and Race to the Top grants allocated by the Office of State Superintendent of Education (OSSE).

Targeted 40 Schools and Capital Commitment Goals

Targeted 40 schools (see Appendix B) were established in 2012 when DCPS rolled out their 5-year strategic plan called "A Capital Commitment 2012-2017." One of the goals was to increase

student proficiency rates at the lowest performing schools by 40 percentage points by the 2016-17 school year. The 40 lowest performing schools were located in D.C. areas with high crime and high unemployment, disease and mortality rates. More than half of the Targeted 40 schools are in wards 7 and 8 (the most impoverish wards in D.C.) and more than 77% of all elementary students are at risk[5] (DCPS, 2017a). In developing this Capital Commitment, DCPS wanted to enhance the low-performing schools financially and invest in their teachers, principals, and staff.

After "A Capital Commitment 2012-2017" expired, Interim Chancellor Amanda Alexander rolled out a new 5-year Strategic Plan for 2017-2021. This plan focuses on increasing student satisfaction, graduation rates, number of students enrolled and college and career readiness. Some of these new goals include doubling the percent of students who are college and career ready, having 100% of K-2 students reading on or about grade level and having 100% of all DCPS schools to be highly rated or improving (DCPS, 2017b). The new Chancellor Lewis Ferebee intends to pursue these goals through investing in school technology, developing community schools and increasing family engagement.

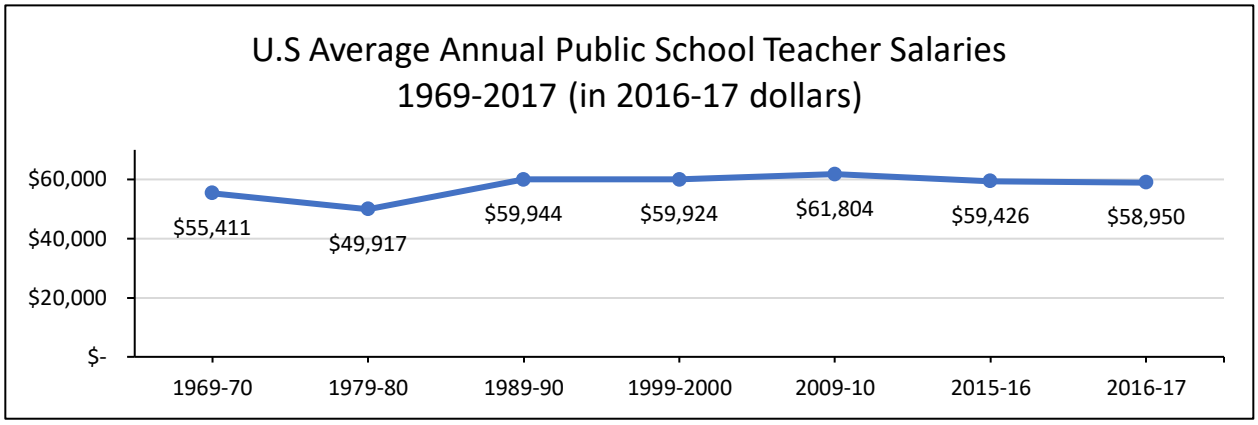
[5] At-risk includes students who are homeless, under the care of the District's foster care system, qualify for Temporary Assistance for Needy Families (TANF) or Supplemental Nutrition Assistance Program (SNAP), or high school students who are overage.

LITERATURE REVIEW

Low Teacher Salaries, Increased Compensation Reforms

Since the mid-20th century, teacher salaries have been based solely on a teacher's level of experience and educational attainment (Cohn, 1996; Odden & Kelley, 2002). From 1969 to 2017, the average American public school teacher salary remained relatively stagnant (see Figure 7). In the 2016-17 school year, the average teacher earned $58,950 (U.S. Department of Education, 2017). Adjusting for inflation, this is about $1,000 less than in 1989 and $3,000 less than in 2009. Education reformers and teacher unions, such as the American Federation of Teachers (AFT) argue that current salaries fail to reward teacher performance and discourages teachers to enter or remain in the career, especially at high-poverty schools. Since the 1980s, school districts and states have used a variety of compensation reform methods to improve teacher quality, retention and student achievement.

FIGURE 7:



Source: National Education Association, Estimates of School Statistics*, selected years, 1969-70 through 2016-17.*

This literature review will focus on the high quality teacher retention and student achievement effects of teacher compensation methods such as individual performance pay, selective retention bonuses (SRBs) and school-based performance pay (SBPP). There is a myriad of other compensation methods like recruitment pay, college loan forgiveness programs, housing assistance, and career ladder programs. These programs are excluded from this review because there is very little research on the evaluation of these programs.

Individual Pay for Performance (PFP)/ Merit Pay

Pay for Performance (PFP) or merit pay for teachers comes in two forms: (i) an annual salary increase, where performance-based compensation becomes a permanent part of a teacher's base salary, and (ii) an annual bonus, where a teacher is awarded money for performance and must re-earn the bonus each year. Both district-specific and nationwide studies on the effectiveness of PFP for teacher retention and student achievement vary based on specific components of the program.

Effects of Performance Pay on High Quality Teacher Retention

PFP programs seem to be effective in retaining high-performing teachers when the program supports strong teacher credentials and dismisses ineffective teachers. One study conducted a national survey on public school teachers and found that school districts with PFP programs experienced significantly greater success attracting high quality teachers than peer districts that did not adopt PFP (Jones & Hartney, 2017). Districts that implemented PFP were also able to retain novice and early career teachers who graduated from college and had higher SAT scores than teachers hired into school districts that did not adopt PFP (Jones & Hartney, 2017). Despite these positive differences, the study fails to discuss the optimal PFP design structure and other aspects of teacher quality such as teaching practices. Studies on DCPS' IMPACT, their teacher evaluation and bonus structure, find that financial incentives and the addition of dismissal threats for low-performing teachers improved teacher performance and retained high quality teachers (Dee & Wyckoff, 2013; Adnot, Dee, Katz & Wyckoff, 2017). However, this type of program is relatively unique in that DC has higher teacher salaries, higher supply of qualified teachers and more funding than other states that allow them to institute dismissal policies.

Effects of Performance Pay on Student Achievement

Research shows that PFP programs for elementary and secondary school teachers can improve student achievement, however these increases are very small and short-term. One study finds that across the nation, performance bonuses improved reading and math achievement by 1 to 2 percentile points after PFP was implemented for three years (Chiang et al., 2017). However, specific student achievement gains differed across districts and schools. In Metro Nashville Public Schools (MNPS), teachers were randomly assigned to be eligible for bonuses of up to $15,000 per year based on student test score improvement on the Tennessee Comprehensive Assessment Program (TCAP). Springer et al. (2011) found no significant difference in students achievement from year to year between teachers who were eligible for the bonus and teachers who were not. In addition, majority of teachers felt like the bonuses did not impact their level of effort nor made changes to their instructional practices. Overall, MNPS' bonus structure did not lead to large, lasting changes in student achievement.

Selective Retention Bonuses (SRBs)

Hard-to-staff schools tend to have higher proportions of students eligible for free and reduced-price lunch (FRPL), students of color, and students performing below grade level on end-of-course exams. These schools are also likely to have teachers with weak credentials or low estimated effectiveness (Clotfelter, Ladd & Vigdor, 2011; Sass et al., 2012; Goldhaber, Lavery & Theobald, 2015). SRBs encourage teachers to accept positions in hard-to-staff schools or hard-to-teach subject areas through financial incentives. Both district-specific and nationwide studies on the effectiveness of SRBs for teachers produce limited and variable findings.

Effects of SRBs on High Quality Teacher Retention

The literature on the effect of SRBs on teacher retention is relatively new and produces mostly null results. Swain, Rodriguez & Springer (2019) conducted a quasi-experiment on retention

bonuses in Tennessee's priority schools[6]. They found that Highly Effective tested-subject teachers who received a $5,000 one-time bonus, were approximately 20% more likely to remain teaching in a priority school than teachers who did not receive a bonus (Swain, Rodriguez & Springer, 2019). Despite the large increase, the program effect on retention was not statistically significant. In Washington state, teachers who complete the National Board for Professional Teaching Standards (NBPTS)[7] certification program and work in high-poverty schools are awarded a $5,000 annual bonus. Cowan and Goldhaber (2018) find that the additional compensation improved hiring, encouraged certification, and reduced turnover at high-poverty schools. Despite these improvements in teacher staff, the study finds little evidence that the bonus directly influenced certification attainment. NBCTs certified in high-poverty schools and received a bonus are at least as effective as teachers who were certified before the bonus was implemented (Cowan & Goldhaber, 2018).

Effects of SRBs on Student Achievement

There is limited literature on the direct effect of SRBs on student achievement. Instead, studies find that SRBs improve teacher quality and effectiveness, which can improve student academic achievement. In Tennessee, schools participating in the $5,000 SRB program had significantly higher math and reading scores than Tennessee schools that did not partake (Swain, Rodriguez & Springer, 2019). In years following the retention bonus distribution, SRB schools continued to have higher math scores than their non-SRB counterparts (Swain, Rodriguez & Springer, 2019). Throughout the study Tennessee schools experienced overlapping policy interventions, therefore it is difficult to directly relate SRB programs to student outcomes. Austin Independent School District (AISD)'s REACH program awarded Highly Effective teachers in the highest need schools an additional stipend of up to $7,000. Although this program was associated with increased test score gains within the first year of implementation, the study could not confirm that bonuses directly improved student outcomes (Balch & Springer, 2015). In fact, by the second year of implementation, there was no additional student test growth. In summary, research indicates that SRBs can significantly reduce the negative effects of teacher turnover and improve teacher workforce quality, but there is no direct effect of SRBs on student outcomes.

School-Based Performance Pay (SBPP)

School-based performance pay (SBPP) encourages school staff to work together to achieve specific school-wide education goals (Odden & Kelley, 2002). Financial incentives are given to all school employees when school-wide goals are met or exceeded. SBPP can also include funds for school resources (supplies, trainings, infrastructure). Various countries, states and school districts use school-based performance awards; however, the effects of each program are limited and mixed. There is currently research on SBPP outcomes such as staff motivation and effort and minimal evidence on student achievement and teacher retention. Studies find that successfully implementation of school-based performance pay programs consists of strong

[6] High-poverty schools with the lowest test scores in Tennessee

[7] The NBPTS is a national, voluntary certification process that involves a yearlong set of assessments. A majority of states accept NBPTS certification to satisfy state licensing requirements and is used as a signal for teacher quality.

principal leadership, constructive assessment feedback and collective teacher motivation (Kelley et al., 2000).

Effects of School-Based Performance Pay on High Quality Teacher Retention

There is currently no research on the direct effect of SBPP on teacher retention, however evidence on teacher motivation, school leader support and positive school environment is relevant. SBPP enhances motivational outcomes and goal attainment for teachers which can increase their desirability to stay in a school (Kelley, 2002). In Kentucky, schools must set a series of goals according to a baseline score. Schools that exceeded their target received a maximum award amount of 10% the average teacher salary for each teacher (Kelley, 1998). Schools that did not meet their target received improvement funds and required a transformation plan. In a study of 16 schools across Kentucky, most teachers were not primarily motivated by the financial incentives. Instead, the fear of sanctions and possible negative publicity motivated teachers to attain school-wide goals. (Kelley, 1998). On the other hand, SBPP can increase stress, pressure and hours worked for all employees for minimal compensation. For example, the Charlotte-Mecklenburg School District's Benchmark Goals Program gave school scores based on grade readiness, absenteeism, and end-of-course exams. Schools with 75 points or more received $1,000 for each staff member while schools that scored less than 60 points earned no bonus. Overall, the teachers in this program felt that the bonus insufficient to make an impact on their retention status and compensate their work.

Effects of School-Based Performance Pay on Student Achievement

Evidence of SBPP on student achievement is insufficient and mixed. Ladd (1999) measures student performance gains in the Dallas Independent School District (DISD) relative to those in other Texas cities. DISD ranked schools based on their contribution to student learning relative to the state average. At high-ranked schools (20% of schools), teachers and principals received a $1,000 bonus and $2,000 for their school activity account. In high-ranked schools, the study finds positive and large achievement gains for Hispanic and white students, but not Black students. Ladd (1999) is unclear why this is true, but it provides and area for further research. On the other hand, some SBPP programs prove to be ineffective because of its inability to motivate teachers and the complexity of the program. For example, in 2007 the New York City Department of Education (NYCDOE) and the United Federation of Teachers (UFT) implemented a school-wide bonus program. Schools receive $3,000 per teacher for achieving school-wide goals. After 2 years evaluating this program, researchers found that the program didn't improve student achievement at any grade level and did not affect teachers' performance and behavior (RAND Education, 2011). As a result, the program was discontinued in 2011 due to its ineffectiveness.

PFP programs, SRBs and SPPs can have positive and negative effects depending on the program structure and bonus amounts. How a school district intends to implement the compensation program can produce different results for teacher retention and student achievement. Overall, the effectiveness of financial incentives for teacher can vary depending on the context and there is currently limited research on sufficient compensation and successful implementation.

ANALYSIS

EVALUATIVE CRITERIA

The goal of this analysis is to provide an evidence-based recommendation that best serves DCPS as it revises its IMPACT bonus payout system while minimizing costs. The recommended alternative should maximize the share of Highly Effective teachers in high-poverty schools at a low-cost. This will require support from the new D.C. Chancellor, Lewis Ferebee, the WTU and OSSE. Based on DCPS' goals and the theory of change that underlies teacher compensation methods, the alternatives presented in this report will be evaluated on the following criteria:

1. Cost
2. Effectiveness at Maximizing the Share of Highly Effective Teachers
    a. Increasing the Number of Highly Effective Teachers
    b. Retaining Highly Effective Teachers
3. Political Viability
4. Fairness/Equity

1. **Cost (40% weight):** This criterion considers the *total compensation payouts.* Total compensation payouts for each alternative will be calculated using DCPS' bonus payouts from school year 2017-18[8]. Appendix D will include these estimates in millions of dollars (2018 dollars). Due to limited data on the current IMPACT bonus system, additional administration costs to run the program per year will not be considered in the main analysis. Appendix E will include administrations costs they may be considered when implementing the alternatives[9]. The best alternative will have the lowest total payout cost.

2. **Effectiveness at Maximizing the Share of Highly Effective Teachers (30% weight):** This criterion considers how effective each compensation program will be at delivering a high quality education for every student through Highly Effective teachers. Effectiveness will be measured by the number of Highly Effective teachers increased and retained in one year. This criterion will project the estimated effect of each alternative based on previous studies on teacher compensation methods when it is available.
    a. **Increasing the Number of Highly Effective Teachers:** This criterion will be evaluated on a scale of *limited (1), sufficient (2), high (3) or very high likelihood (4)* of effectively increasing the number of Highly Effective teachers.
    b. **Retaining Highly Effective Teachers:** This criterion will be evaluated on a scale of *limited (1), sufficient (2), high (3) or very high likelihood (4)* of effectively retaining Highly Effective teachers.

    Both components will be considered equally. The best alternative will have the highest likelihood of increasing and retaining the number of Highly Effective teachers per year.

[8] DCPS Bonus Payout Data for 2017-18 is readily available and will be used as a proxy for comparing all alternatives
[9] Administration costs will be estimated based on literature from other state and school district programs, discussion with the IMPACT operations team, and DCPS' Budget Development guide for fiscal year 2018 and 2019.

3. **Political Viability (15% weight):** This criterion considers the difficulties DCPS will face in generating support for their compensation program. Teacher compensation is heavily influenced by the work of DCPS, the new D.C. Chancellor Lewis Ferebee, the WTU and OSSE. In evaluating the best policy alternative, it is important to consider the impact and viewpoints of these stakeholders. This criterion will be estimated through previous literature, popular press, and press releases. Stakeholders are assessed and given a score for whether they will *strongly support (2), slightly support (1), remain neutral (0), slightly oppose (-1), or strongly oppose (-2)* the alternative (see Appendix F for full calculations of political viability scores). The best alternative will have a high political viability score.

4. **Fairness/Equity (15% weight):** This criterion considers how well the compensation program targets the lowest performing, high-poverty schools. Specifically, does the proposed alternative prioritize maximizing Highly Effective teachers in high poverty schools? This criterion will be evaluated on a scale of *low (1), moderate (2) or high (3)* distribution of benefits to the lowest performing, high-poverty schools. The best alternative will have high distribution of benefits to the lowest performing, high-poverty schools.

ALTERNATIVES

This analysis evaluates four compensation alternatives that attempt to maximize the share of Highly Effective teachers in high-poverty schools while minimizing cost. This section describes the alternatives in detail[10] and evaluates them based on the evaluative criteria of cost, effectiveness at maximizing the share of highly effective teachers, political viability, and fairness/equity.

1. Maintain Current IMPACT Bonus Structure (Status Quo)
2. Restructure Bonus Payouts for High-Poverty Schools
3. School-Based Performance Award System for Comprehensive and Improvement Schools (CS)
4. Add-On Bonus for National Board Certified Teachers (NBCT)

ALTERNATIVE 1: Maintain Current IMPACT Bonus Structure (Status Quo)

All alternatives presented in this analysis will be compared to alternative 1, given that maintaining the current IMPACT bonus structure is an option. DCPS will make no changes to the current system and will continue to administer bonus payouts the same way they were implemented in school year 2017-18 and 2018-19. DCPS will continue to award annual bonuses to returning Highly Effective rated teachers and bonus amounts will vary based on school poverty level and teacher type (see Figure 8). Teachers will only receive bonuses if they return to DCPS the following year.

FIGURE 8: Current IMPACT Evaluation Bonus Payouts

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR ADD-ON IF YOU ARE IN ONE OF THE 40 TARGETED SCHOOLS	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	Additional $10,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	n/a	$3,000

In SY 2011-2012, 77% of Effective and Highly Effective teachers stayed for the following school year (Walsh & Dotter, 2014). By 2017, retention rate increased to 92% (DCPS, 2017b). This provides evidence that the current IMPACT system is working and will continue to increase the share of Highly Effective teachers in the next 5 years. However, the program costs seem to be increasing steadily. Between school year 2016-17 and 2017-18, bonus payouts increased by $2 million and budget costs increased from $2,320 per teacher to $2,818 per teacher (DCPS, 2017c).

[10] Other possible alternatives were considered for this analysis. Those alternatives can be found in Appendix H: Other Possible Alternatives.

Consequently, an additional $10,000 bonus for Highly Effective teachers at Targeted 40 schools are no longer relevant under the current Capital Commitment goals of DCPS. As of 2017, the DCPS shifted its "Capital Commitment" to focus on increasing student satisfaction, graduation rates, number of students enrolled and college/career readiness. For example, one of the main goals is to have 100% of all DCPS schools to be highly rated or improving (DCPS, 2017b) by 2022. Targeted 40 schools are no longer included as focal point for this capital commitment, therefore this alternative may not support DCPS' current initiatives.

EVALUATING ALTERNATIVE 1: Maintain Current IMPACT Evaluation System

Cost	Effectiveness	Political Viability	Fairness/Equity
$16.3 Million	High Likelihood	Score: 0.85 Slightly Support	High

Cost
In school year 2017-18, DCPS spent *$16.3 million* on bonus payouts for teachers across the district (See Appendix D for more information).

Effectiveness at Maximizing the Share of Highly Effective Teachers
The share of Highly Effective teachers increased to 40% (up 4 percentage points from last year) in school year 2017-18. From 2012-2016, the total percentage of Highly Effective teachers at DCPS increased by about 1 or 2 percentage points each year. From school year 2016-17 to 2017-18, the share of Highly Effective teachers increased by 11% using this bonus structure. If present trends continue, DCPS will see an increase of Highly Effective teachers from 40% to 47% by 2021-22.

Under this structure retention for Effective and Highly Effective teachers in school year 2018-19 increased to 94% (up 2 percentage points from last year)[11]. It is *highly likely* this option will retain and increase the number of Highly Effective teachers.

Political Viability
The overall education landscape in D.C. would likely *slightly support* this alternative. First, Chancellor Ferebee is "committed to a [teacher] evaluation process that is fair," and intends to examine IMPACT within the next year (Stein, 2019). Chancellor Ferebree will slightly support this alternative because he is looking to restructure IMPACT without losing the trust of key

[11] Responses for DCPS' IMPACT operations team.

stakeholders in DCPS. Second, the WTU is satisfied with the current bonus structure, however they expressed the need to change IMPACT with less stringent teacher evaluations. In a recent survey, 97% of WTU members who took the opinion poll said changes should be made to IMPACT because it is "unfairly subjective" and dismisses the performance of students (WTU, 2018). Despite these results, the number of survey respondents was very small and only represented a small percentage of overall teachers at DCPS. Overall, the WTU is more frustrated with school leadership and school environment, than the financial incentives DCPS provides. The WTU will slightly support this alternative because there will be no drastic changes to the bonus structure, however the WTU will continue to oppose IMPACT's evaluation methods. Finally, this alternative aligns well with the mission and vision of OSSE "…to close the achievement gap and ensure people of all ages and backgrounds are prepared to succeed in school and in life." OSSE will remain neutral to this alternative because it provides resources to the District's most vulnerable student populations and has never expressed opposition before (See Appendix F for more information).

Fairness/Equity

This alternative has a *high* distribution of benefits to the lowest performing, high-poverty schools. This alternative prioritizes Targeted 40 schools by providing an additional $10,000 for Highly Effective teachers that teach at Targeted 40 schools. This alternative also provides Highly Effective teachers in high-poverty schools $8,000 more in bonuses than Highly Effective teachers in low-poverty schools.

ALTERNATIVE 2: Restructure Bonus Payouts for High-Poverty Schools

According to DCPS' new 5-year Strategic Plan for 2017-2021, "Targeted 40" is no longer a relevant school poverty level label. Under this alternative, DCPS will no longer provide an additional award for Highly Effective teachers in Targeted 40 schools and instead increase bonuses for Highly Effective teachers in all high-poverty schools by $5,000. By removing Targeted 40 bonuses, teachers can no longer receive a total possible annual bonus of $25,000. Instead, this alternative will increase bonuses for Highly Effective teachers in High Poverty schools to $15,000. As a result, the total possible annual bonus a Highly Effective teacher at a high-poverty school can receive is $20,000 (see Figure 9). Bonus amounts for Highly Effective teachers in low-poverty schools will remain the same as alternative 1 (status quo). Teachers will only receive bonuses if they return to DCPS the following year.

FIGURE 9: Alternative 2 Modifications to Bonus Payouts

Status Quo:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR ADD-ON IF YOU ARE IN ONE OF THE 40 TARGETED SCHOOLS	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	Additional $10,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	n/a	$3,000

Alternative 2:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$15,000	Additional $5,000	$20,000
	Low-Poverty	$2,000	Additional $1,000	$3,000

This alternative has the potential to continue to incentivize teachers at high-poverty schools, but at a reduced cost. According to a randomized evaluation of teacher performance pay programs in Andhra Pradesh, India, Muralidharan and Sundararaman (2011) find that individual teacher incentives outperformed group incentive schools after two years of implementation. They discover that performance-based bonus payments to teachers were significantly more cost-effective in increasing student test-scores and the quality of teachers (provide more resources to students, paid special attention to low-performing students, prepared more, etc.) than group incentives.

This alternative will also make minimal changes to the current IMPACT bonus payout process. Teachers will still receive the same evaluation scores, ratings, and payout process when they return to DCPS the following year. The only downfall is that teachers who used to receive a high bonus ($25,000) will no longer receive the same bonus the following year. If DCPS decides to

move forward with this alternative, it will be important to clarify that bonuses are increasing for teachers in high-poverty schools and decreasing for teachers in Targeted 40 schools in order to reorient IMPACT to the current goals of DCPS in a cost-effective manner.

EVALUATING ALTERNATIVE 2: Restructure Bonus Payouts for High Poverty Schools

Cost	Effectiveness	Political Viability	Fairness/Equity
$17.4 Million	Sufficient Likelihood	Score: 0.85 Slightly Support	Moderate

Cost
This alternative is estimated to cost DCPS about *$17.4 million* on bonus payouts for teachers across the district (See Appendix D for more information).

Effectiveness at Maximizing the Share of Highly Effective Teachers
This alternative will continue to incentive Highly Effective teachers at DCPS through annual bonuses awarded when the teacher returns the following school year. Highly Effective teachers at high-poverty schools will be given a higher bonus, and therefore will be more incentivized to remain in those schools. This alternative may not incentivize teachers who are already teaching in Targeted 40 schools because they will receive less than previously. Tennessee has a similar program to this alternative in which $5,000 are awarded to high-performing teachers who return to teaching in high-poverty schools. Springer et al. (2016) found that tested high-performing teachers who received a $5,000 bonus are approximately 20% more likely to remain teaching in a high-poverty school. Overall, DCPS currently provides the highest bonuses across the country. As a result, a $5,000 decrease in bonuses for teachers in the lowest performing, high-poverty schools will have a minimal effect in increasing and retaining Highly Effective teachers compared to alternative 1. It is *sufficiently likely* this option will maximize the share of Highly Effective teachers.

Political Viability
The overall education landscape in D.C. would likely *slightly support* this alternative. When Chancellor Ferebee was Superintendent of Indianapolis Public Schools (IPS), teachers received pay increases four times since 2013 (Barrett, 2018). Raising pay for teachers has been a priority for Chancellor Ferebee and it is likely he will slightly support this alternative for DCPS. The WTU may disagree with decreasing bonus amounts for teachers in the lowest performing schools in

the school district, however, will appreciate the increase in bonuses for all teachers in high-poverty schools. It is likely the WTU will slightly support this alternative. Finally, similar to alternative 1, this alternative aligns well with the mission and vision of OSSE "…to close the achievement gap and ensure people of all ages and backgrounds are prepared to succeed in school and in life." OSSE will remain neutral to this alternative because it provides resources to the District's most vulnerable student populations and has never expressed opposition before (See Appendix F for more information).

Fairness/Equity

This alternative has a *moderate* distribution of benefits to the lowest performing, high-poverty schools. All high poverty schools receive $13,000 more in total bonuses than low-poverty teachers. However, there is no distinction or extra incentive for teachers in the lowest performing, high-poverty schools.

ALTERNATIVE 3: School-Based Performance Award System for Comprehensive Support and Improvement Schools (CS)

In December 2018, OSSE first implemented the School Transparency and Reporting (STAR) Framework as an accountability system under the federal Every Student Succeeds Act (ESSA). The STAR Framework is intended to provide families and community members an annual summative rating for all D.C. schools. Schools receive scores and ratings[12] based on PARCC results and growth, student demographics, and re-enrollment and graduation rates compared to other students across the city. In addition, the ESSA requires that states identify and support Comprehensive Support and Improvement Schools (CS)[13] and Targeted Support and Improvement Schools (TS[14]). To comply, OSSE is planning on investing $11 million over the next three years depending on federal funding from Title I, Part A (OSSE, 2018). It's possible that schools rated in the bottom 5% of all D.C. schools will receive $1 million per school towards improvement from OSSE, distributed over 3 years. In addition, schools in the bottom 5% must write comprehensive schools plans that outline steps for improvement and enhancing family and community engagement.

In 2018, 42(40%) D.C. public schools received less than 2 stars and 65(60%) received 3 stars or more. The average STAR ratings for DCPS is as follows:

DCPS Poverty Level	Average STAR Rating
Targeted 40	2
High-Poverty	3
Low-Poverty	4

Eight DCPS schools are designated as CS schools and received a 1 STAR rating (see Appendix C). These schools are mainly in ward 8 and are defined as Targeted 40 or high-poverty schools. These schools will receive immediate supports including a data review, needs assessment, and robust community engagement from OSSE using federal funding. By spring 2019, DCPS hopes to work with CS schools to develop support packages for the 2019-20 school year. These packages include building leadership capacity, academic intervention and community school partnerships. IMPACT can play a role in assisting these packages and prioritize supports, resources and innovative approaches to schools that need it the most.

In addition, every D.C. Public School published online Comprehensive School Plans "Snapshot" to give community members school-specific information on focus areas each school intends to grow and improve. Each school must list school strategies, educator action steps and goals for students in areas of literacy, math and social emotional learning (SEL). For example, Moten

[12] Ratings are on a scale of 1-5 stars; 5 being the highest score

[13] There are two types. Type I are Title I schools that score in the bottom 5% of the total number of points on the STAR Framework as compared to their peers. Type II are high schools in which both four-year and five-year adjusted cohort graduation rates fall below 67%.

[14] Schools that have at least one student group that is performing at or below the level of the lowest performing schools in DC (Comprehensive Support and Improvement Schools)

Elementary School[15] states they will improve literacy by providing opportunities through the day for students to engage in structured writing tasks.

This policy alternative will support OSSE's new ESSA initiative and give CS schools additional school-wide bonuses when they achieve a certain set of goals in their comprehensive plan. CS schools that increase their STAR school score by 10% in the next school year will receive $5,000 per teacher and an additional $10,000 for supports such as leadership coaches, professional learning, on-site visits, staffing, educational materials, and programmatic change assistance. These funds will also be in addition to School Improvement Grants (SIG) given to low-performing, high-poverty schools by Title I federal funding. In addition, Highly Effective teachers in low- and high-poverty schools will continue to receive individual bonus payouts. Because the lowest performing schools will already be eligible for an extra bonus, individual bonuses for Highly Effective teachers in Targeted 40 schools will be removed (see Figure 10). These bonuses will be award to each school the following school year.

FIGURE 10: School-Based Performance Award System for CS schools

Bonus Payouts for CS Schools that Improve STAR school score by 10%

YOUR SCHOOL DESIGNATION	YOUR PREVIOUS STAR SCORE	EFFECT	YOUR SCHOOL AWARD
Comprehensive Support and Improvement School	2.00 – 16.00	INCREASE BY 10%	$5,000 per teacher plus $10,000

Individual Bonus Payouts

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR TOTAL POSSIBLE ANNUAL TIME BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	$15,000
	Low-Poverty	$2,000	Additional $1,000	$3,000

One of DCPS' main goals is to have 100% of all DCPS schools highly rated or improving (DCPS, 2017b). This alternative has the potential to increase overall school performance in the lowest performing, high-poverty schools by giving every teacher in a CS school an award for improving, regardless of their individual rating. This encourages school staff to work together to achieve specific school-wide education goals. Research shows that when a school collectively works together for improvement, positive school culture and student outcomes also increase (Kelley et al., 2000).

[15] Targeted 40 School

On the other hand, some school-based performance programs prove to be ineffective due to low motivational value of the bonus relative to other incentives and unfamiliarity of the program. According to a study of KIRIS in Kentucky, many teachers felt that this system increased stress, pressure and hours worked (Kelley, 1998). For most teachers in Kentucky, the school-based performance award was a nice acknowledgement of their performance, but not as an incentive that drove teacher behavior. To effectively implement this alternative, DCPS must foster strong motivation conditions such as buy-in and perceived fairness, as well as implement the program on a pilot basis.

With this alternative, DCPS will incorporate OSSE into the IMPACT system. Because OSSE will provide part of the data for this alternative, it is important for DCPS to maintain strong relationships and lines of communication to ensure DCPS can give bonuses to all teachers at an appropriate time.

EVALUATING ALTERNATIVE 3: School-Based Performance Award System for Comprehensive Support and Improvement Schools (CS)

Cost	Effectiveness	Political Viability	Fairness/Equity
$12.9 Million - $14.2 Million	Limited Likelihood	Score: -0.55 Slightly Oppose	Moderate

Cost

This alternative is estimated to cost DCPS about $12.1 million in bonus payouts for teachers when bonuses for Targeted 40 schools are removed. The total bonus payouts for an estimated 3 CS schools that improve their STAR score within a year is about $689,000. The total resource bonus payout is $30,000 for a total of *$12.9 million per year*. These cost estimates may be higher if more CS schools improve within the next year than anticipated. For example, if all CS schools improved their STAR score within a year, the total bonus payouts will be about $2 million and the total resource bonus payout will be $80,000. As a result, the total cost of this alternative could be up to *$14.2 million per year* (See Appendix D for more information).

Effectiveness at Maximizing the Share of Highly Effective Teachers

This alternative will not increase the number of Highly Effective teachers in high-poverty schools. Instead, this alternative will motivate teachers of all IMPACT ratings in each CS school to improve school goals and strive to be Highly Effective teachers. Theoretically, if all teachers are striving to achieve the same goal, less effective teachers may improve their practice.

Through interviews with teachers and principals, Kelley et al. (2000) finds that many teachers made changes in teaching practice to align curriculum and instruction with program goals. However, there is no statistical data that supports this.

This alternative also will not increase retention of Highly Effective teachers. In fact, evidence shows that this alternative will increase teacher stress in high-poverty schools, limiting positive school climate and willingness to work in the school (Kelley et al., 2000). There is a *limited likelihood* this option will maximize the share of Highly Effective teachers.

Political Viability

The overall education landscape in D.C. would *slightly oppose* this alternative. First, Chancellor Ferebee intends to invest in school technology programs, make school budget and support plans transparent and expand community schools to integrate academics with socials services and student and family engagement (DCPS, 2019). Because these new programs are at the forefront and this alternative requires State (D.C government) involvement, Chancellor Ferebee may slightly oppose this alternative. Second, the WTU will oppose removing bonuses for Targeted 40 schools and may have negative perceptions about school-based awards. In a study on school-based award programs, many teachers believed that school-wide bonuses create a "free-rider problem" where teachers who did not contribute to school improvements receive a bonus (Kelley et al., 2000). At the same time, many teachers believed the school must fully be developed culturally before transition to a school-wide bonus system. Finally, OSSE will strongly support this alternative because it provides additional buy-in and accountability from DCPS. This alternative will ensure an agency under OSSE is complying with the policies stated under ESSA. According to a conversation with Christina Parrish, Manager of School Improvement Grant Program, OSSE will likely favor this initiative to increase STAR ratings for the lowest performing schools (See Appendix F for more information).

Fairness/Equity

This alternative has a *moderate* distribution of benefits to the lowest performing, high-poverty schools in DCPS. Schools designated as CS schools by OSSE will receive a $10,000 plus $5,000 per teacher in addition to federal funding. However, other low-performing, high-poverty schools will not receive the same benefit. Low-performing, high poverty schools not labeled as CS will only receive federal funding from Title I and no reward for improvement. In addition, low-poverty schools will receive no additional award.

ALTERNATIVE 4: Add-On Bonus for National Board Certified Teachers (NBCT)

The National Board for Professional Teaching (NBPT) Standards Certification Program is a voluntary program that takes one to three years. The program includes familiarity to standards in the teacher's certificate area, evaluating personal teaching practices, and reviewing assessment content. Once a teacher passes the final assessment, the teacher becomes a National Board Certified Teacher (NBCT) for 10 years. NBCTs are known to improve student learning, increase financial opportunities and have a strong a portable teaching license across the U.S. Currently, there are more than 91,000 NBCTs nationwide (Exstrom, 2011). North Carolina, California, South Carolina, Washington and Florida have the most NBCTs, however these teachers are more likely to teach in affluent communities (Goldhaber, 2006; Humphrey, Koppich & Hough, 2005).

In 2009, D.C provided a one-time bonus of $4,000 to teachers who are Board certified, but only 1.2% of teachers were Board certified. By 2011, DCPS discontinued bonuses for NBCTs for unknown reasons (Rogers, 2011). In 2018, Washington, DC had the 3rd lowest number of NBCTs (86 teachers) compared to Washington state and North Carolina that had over 10,000 NBCTs (NBPTS, 2018b). In fact, in the 2017-18 school year, D.C had 0 new NBCTs out of 3,907 nationwide. Currently at DCPS, there are 57 NBCTs and 9 pursing Board Certification.

This alternative will increase awareness of NBCTs by adding financial incentives directly into the IMPACT system. This alternative will remove the add-on bonus for teachers in Targeted 40 schools as the "Targeted 40" school poverty level is no longer relevant under the current Capital Commitment goals of DCPS. Any teacher who holds a valid National Board certificate for the entire duration of the school year will receive an annual bonus of $5,000. Teachers who pursue a valid National Board certificate during the school year will receive an annual bonus of $3,000 (60% of the annual bonus). Teachers who hold a valid National Board certificate for an entire school year at a high-poverty school will receive an additional bonus of $5,000 for a total of $10,000. (See Figure 11).

FIGURE 11: Bonus Payout Structure with NBCT Add-On

YOUR SCHOOL'S POVERTY LEVEL	YOUR ADD-ON IF YOU ARE A NATIONAL BOARD CERTIFIED TEACHER (NBCT)	YOUR IMPACT RATING	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR TOTAL POSSIBLE ANNUAL BONUS
High-Poverty	$10,000	Highly Effective	$10,000	Additional $5,000	$25,000
Low-Poverty	$5,000		$2,000	Additional $1,000	$8,000

Many states incentivize teachers to be NBCTs and have seen positive effects in teacher retention and teacher quality. Based on 2018 NBPTS data, about 25 states provide either an annual stipend or salary increase for pursing and/or earning a National Board certification (NBPTS, 2018a). Some states also give additional bonuses for becoming National Board Certified and teaching in a low-performing school. According to a 2018 report by the Center for Educator

Recruitment, Retention, and Advancement (CERRA), teacher turnover rates for NBCT teachers in South Carolina were significantly lower than turnover rates for regular teachers. Other studies find that NBCTs are significantly more effective in math and reading than non-certified teachers with similar levels of experience and teachers who never applied to the program (Cowan & Goldhaber, 2018; Goldhaber & Anthony, 2007). However, these studies also find that NBCTs seem to be less effective years after teachers are certified because they dedicate a greater portion of their time and effort to priorities outside of the classroom.

On the other hand, there is mixed evidence about the productivity of teachers during the application process. Goldhaber and Anthony (2007) also find that the effectiveness of teachers during the application year is lower than teacher who do not become certified. Many teachers spend 200 or more hours pursuing National Board Certification, which can increase the level of stress and decrease teacher effectiveness. However, Clotfelter, Ladd and Vigdor (2007) do not find the same drop in effectiveness in their study with NBCTs in North Carolina schools.

The certification process fee is $2,500 plus a $65 processing charge, which may deter teachers from participating. The likelihood young teachers will take advantage of this opportunity is slim, nevertheless studies have shown that Board certified teachers experience lower burnout levels in exhaustion than their non-Board certified peers (Pucella, 2011). Increased leadership opportunities, higher pay, and recognition by colleagues are NBCT benefits that alleviate stress and frustration. An additional bonus of $3,000 can also provide compensation annually as teachers are pursuing certification.

EVALUATING ALTERNATIVE 4: Add-On Bonus for National Board Certified Teachers (NBCT)

Cost	Effectiveness	Political Viability	Fairness/Equity
$12.5 Million	Sufficient Likelihood	Score: 1.5 Strongly Support	Moderate

Cost:
This alternative is estimated cost DCPS about $12.1 million in bonus payouts when bonuses for teachers at Targeted 40 schools are removed. For an estimated 57 teachers at DCPS and 9 teachers pursuing their NBCT certification, the total additional bonus payouts for NBCTs is about $332,000 for a total of *$12.5 million per year* (See Appendix D for more information).

Effectiveness at Maximizing the Share of Highly Effective Teachers
This alternative will somewhat increase and retain Highly Effective teachers. In a study to examine the distribution, retention and mobility trends of Washington state NBCTs from 2006 to 2010, Elfers and Plecki (2014) find that when teachers are given an additional $5,000 for being an NBCT at a high-poverty school, the proportion of teachers in those challenging schools increased an average of 1.7 percentage point per year. This alternative will attract NBCT to high-needs schools and encourage teachers already teacher to improve their practice through NBCT.

The same study also finds that NBCTs in challenging schools stay in the same school at higher rates than all NBCTs nationwide (93% compared to 85%). Specifically, in Washington state, the retention rate of NBCTs is all schools increased by an average of 2.5 percentage points (Elfers and Plecki, 2014). At the same time, the overall literature on NBCTs is limited. It could be the case that individuals who apply to be NBCTs are already effective teachers and want to teach in more affluent schools. It is *slightly likely* this option will maximize the share of Highly Effective teachers.

Political Viability
The overall education landscape in D.C. would *strongly support* this alternative. First, Chancellor Ferebee would like to focus on improving quality in high-poverty school through teacher certification. Because this places an emphasis on teacher certification, the Chancellor will slightly support this alternative. Second, the WTU has expressed interest in focusing more on teacher credentials than student test scores and standardized exams. In 2017, Nebraska lawmakers were looking to remove the master teacher program that rewards NBCTs with a $5,000 bonus. As a result, the teacher unions disapproved of this idea. Teacher unions saw NBCT bonuses as an attractive alternative to merit pay systems that reward teachers on variables out of their control like student performance (Felton, 2017). There has also been high approval from teacher unions in other districts like the CTU for Chicago Public Schools (Cherkasky-Davis, 2019). Finally, OSSE will slightly support this alternative. OSSE has had NBCTs speak at several conferences to promote outstanding teacher and professional leadership. However, OSSE may feel that they have jurisdiction over teacher certification and adding NBCT will be an additional certification to monitor. This alternative may require discussion between OSSE and D.C. state law (See Appendix F for more information).

Fairness/Equity
This alternative has a *moderate* distribution of benefits to the lowest performing, high-poverty schools. This alternative prioritizes high-poverty schools by providing an additional $5,000 for Board Certified teachers at high-poverty schools. However, many NBCT applicants tend to teach in schools where students already have high achievement in reading and math, few students with FRPL and few students of color. Although studies from Elfers and Plecki (2014) show that financial incentives increase the proportion of effective teachers in high-poverty schools, the incentives may not be enough to motivate all NBCTs to teach at high-poverty school.

OUTCOMES MATRIX

In evaluating the policy alternatives, cost was considered the most important criterion at 40%. Effectiveness at maximizing the share of Highly Effective teachers was weighted second at 30%, followed by political viability and fairness/equity at 15% each. Explanations of how each policy alternative performed for each criterion are included in the matrix below (See Appendix G for outcomes matrix scoring).

	Cost (40%)	Effectiveness (30%)	Political Viability (15%)	Fairness/Equity (15%)
Alternative 1: Maintain Current IMPACT Bonus Structure (Status Quo)	$16.3 Million	High Likelihood	Score: 0.85 Slightly Support	High
Alternative 2: Restructure Bonus Payouts for High-Poverty Schools	$17.4 Million	Sufficient Likelihood	Score: 0.85 Slightly Support	Moderate
Alternative 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS)	$12.9 Million – $14.2 Million	Limited Likelihood	Score: - 0.55 Slightly Oppose	Moderate
Alternative 4: Add-On Bonus for National Board Certified Teachers (NBCT)	$12.5 Million	Sufficient Likelihood	Score: 1.5 Strongly Support	Moderate

Key

- High Favorability
- Moderate Favorability
- Low Favorability
- Recommendation

RECOMMENDATION & IMPLEMENTATION

SHORT-TERM RECOMMENDATION:

Alternative 1: Maintain Current IMPACT Bonus Structure (Status Quo)

After analyzing all policy alternatives, it is recommended that DCPS pursue Alternative 1 and maintain the current IMPACT bonus structure. The current IMPACT bonus structure has the highest likelihood of maximizing the share of Highly Effective teachers and the highest distribution of benefits to high-poverty schools. Alternative 1 has also garnered sufficient support from key stakeholders, such as Chancellor Ferebee, the WTU, and OSSE for the past few years (see Appendix G for outcomes scoring). The trade-off with this recommendation is its cost. DCPS will continue to spend about $16 million on bonus payouts and is expected to spend at least $23 million by 2021. Despite the relatively high cost, this alternative is necessary to gather more data missing from this analysis. Based on prior research, the current bonus amounts at DCPS is sufficient to incentivize teachers. There may be other components of the IMPACT structure or high-poverty schools in general that are causing a gap in Highly Effective teachers between high- and low-poverty schools. Overall, this alternative will continue to distribute more favorability by most of the criteria and will allow for more information collection to better understand the effects of the bonus structure.

SHORT-TERM IMPLEMENTATION:

To financially support IMPACT, DCPS will continue to receive funding from localities and federal funds such as Title I. Cost will remain sustainable so long as DCPS continues to prioritize teachers at high-poverty schools. DCPS currently has an effective mechanism to increase and retain the number of Highly Effective teachers at high-poverty schools. In fact, after conducting thorough analysis and research, financial incentives may not be the main driver for attracting and retaining Highly Effective teachers in high-poverty schools. Bellwether Education Partners examines exit surveys administered by DCPS that ask teachers to explain why they left the district, where they would work next and what DCPS could have done to make them stay. Through this analysis, Bellwether finds that majority of DCPS teachers leave due to inconsistent work/life balance, school leadership and desire to pursue a career change (Pennington & Brand, 2018). The analysis also finds that behavioral support and encouragement/recognition from school leadership would have retained high-performing teachers (Pennington & Brand, 2018).

Because IMPACT changes every year, there is no consistent data to measure and analyze trends. Much of the current research focuses on IMPACT's teacher turnover and dismissal effects on low-performing teachers, but nothing on how effective bonuses are to increasing retention of Highly Effective teachers (Dee & Wyckoff, 2013; Adnot, Dee, Katz & Wyckoff, 2017). Before making more changes, it is important for DCPS to continue to monitor the current IMPACT evaluation system for another three years to better understand what is attracting and retaining Highly Effective teachers in high-poverty schools. Data collection should include where these teachers teach, what components of IMPACT accurately measure effectiveness and how incentivizing annual bonuses are.

LONG-TERM RECOMMENDATION:

Alternative 4: Add-On Bonus for National Board Certified Teachers (NBCT)

In the long-term, DCPS should consider Alternative 4 and include an add-on bonus for National Board Certified teachers while removing bonuses for teachers at Targeted 40 schools. About $4 million are spent on bonuses for teachers in Targeted 40 schools. This alternative will reallocate those funds to support teachers with and pursuing a National Board Certification. This alternative has the lowest cost and the most support from key stakeholders. Although costs may increase in the future, it is permissible for DCPS to use federal funding to support teachers and NBCTs working in high-poverty schools through certification fees, bonus pays and mentoring supports. While the literature on the effectiveness of NBCTs is limited, there is evidence that National Board Certification bonuses will add more emphasis on the credentials of a teacher rather than focusing on outcomes teachers cannot control, such as test scores. In addition, because DCPS offers other incentives for teaching at a high-poverty school, NBCTs will be more inclined to work there as opposed to low-poverty schools.

LONG-TERM IMPLEMENTATION:

The implementation of this alternative requires more time and attention. This alternative should be implemented through a three-phase approach. First, DCPS will inform and gather buy-in from key stakeholders such as teachers, administrators and the WTU. DCPS must hold information sessions with these stakeholders about what NBCTs are, how to go about the certification process, and explicitly explain the reasons for change (to strengthen the Capital Commitment goals of DCPS and improve student outcomes in high poverty schools). The NBPTS provides a variety of resource videos, briefs and handouts about the certification process. In addition, DCPS will host focus groups and discussion forums to receive teacher and administrator feedback and input. Next, DCPS will notify and set changes to the bonus structure at the beginning of the school year. It is important that teachers, administrators, central office staff and faculty are aware of the changes in advance and at the beginning of the school year. Lastly, DCPS will create a resource center at DCPS to hold teachers accountable as they go through the Board Certification process. Board Certification consists of a lot of time, effort and money in order to be certified. The resource center will be a website and a support group where National Board candidates and current NBCTs can gather more information about the application process and receive additional resources for aligning courses to National Board Standards. This center will be modeled after Illinois State and North Carolina Public Schools which provides handouts, links, and working itineraries to support candidates through all parts of the process. After several years of success, the NBCT resource center will also promote a mentoring program between current NBCTs and teachers pursing Board certification.

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APPENDICIES

APPENDIX A: DCPS IMPACT GROUPS

Teachers and staff members at DCPS are assessed according to their specific roles and responsibilities. Below is a list of types of teachers and staff members.

Group	Description
Group 1	Teachers Grades 4+ with Individual Value-Added Student Achievement and Student Survey Data
Group 1a	Teacher LEAP Leaders Grates 4+ with Individual Value-Added Student Achievement and Student Survey Data
Group 2	Teachers Grades 3+ with Student Survey Data
Group 2a	Early Childhood Education Teachers
Group 2b	Teachers (Grades 1+) without Student Survey Data
Group 2c	Teacher LEAP Leaders Grades 3+ with Student Survey Data
Group 2d	Small Group Intervention and Grades 1-2 Teacher LEAP Leaders
Group 2e	Early Childhood Education Teacher LEAP Leaders
Group 3	Special Education Teachers
Group 3a	Special Education Teachers – Communication and Education Supports CES Program
Group 3b	Special Education Teachers – Early Childhood Education
Group 3c	Special Education Teachers – Communication and Education Support CES Program – Early Childhood Education
Group 3d	Itinerant Special Education Teachers
Group 3e	Special Education Teacher LEAP Leaders
Group 3f	Special Education Teacher LEAP Leaders – Early Childhood
Group 5	Itinerant English Language Learner ELL Teachers
Group 6	Shared Teachers
Group 7	Home Hospital Instruction Program HIP Teachers

Group 8	Student Support Professionals
Group 9	Library Media Specialists
Group 10	Counselors
Group 11	School-Based Social Workers
Group 11a	School-Based Psychologists
Group 12	Related Service Providers
Group 12a	Speech-Language Pathologists
Group 13	Special Education Coordinators
Group 14	Program Coordinators and Deans
Group 15	Instructional Coach LEAP Leaders
Group 16	Other Instructional Coaches
Group 17	Educational Aides
Group 18	Office Staff
Group 19	Custodial Staff
Group 20	All Other School-Based Personnel

APPENDIX B: TARGETED 40 SCHOOLS (SY 2017-18)

40 Lowest Performing Schools				
22 Elementary Schools		**5 Middle Schools**	**5 Education Campuses**	**8 High Schools**
Aiton ES	Moten ES	Eliot-Hine MS	Browne EC	Anacostia HS
Amidon-Bowen ES	Nalle ES	Hart MS	Cardozo EC	Ballou HS
C.W. Harris ES	Noyes ES	Johnson MS	LaSalle Backus EC	Coolidge HS
Drew ES	Patterson ES	Kelly Miller MS	Walker-Jones ES	Dunbar HS
Garfield ES	Savoy ES	Kramer MS	Wheatley EC	H.D. Woodson HS
H.D. Cooke ES	Simon ES			Luke C. Moore HS
Ketcham ES	Smothers ES			Roosevelt HS
Kimball ES	Stanton ES			Washington Metropolitan HS
King ES	Thomas ES			
Lawrence E. Boone ES	Turner ES			
Malcom X ES	Tyler ES			

APPENDIX C: 2018 DCPS COMPREHENSIVE SUPPORT AND IMPROVEMENT SCHOOLS

School Name	STAR School Rating	STAR School Score	Ward
Anacostia High School	1	2.85	8
Ballou High School	1	4.65	8
Cardozo Education Campus	1	5.72	8
Eliot-Hine Middle School	1	7.43	6
Kramer Middle School	1	12.33	7
Langley Elementary School	1	13.36	8
Moten Elementary School	1	14.26	5
Sousa Middle School	1	15.12	1

APPENDIX D: COSTS ASSUMPTIONS

The following are an estimation of cost areas considered when evaluating the alternatives. Due to limited budget information, some costs are not listed.

ALTERNATIVE 1: Maintain Current IMPACT Bonus Structure (Status Quo)

Assumptions	Amount	Source
Total Bonus Payouts for Teachers	$16.3 million	DCPS IMPACT Bonus Payouts from School Year 2017-18
Total Cost	**$16.3 million**	

ALTERNATIVE 2: Restructure Bonus Payouts for High-Poverty Schools

Assumptions	Amount	Source
Total Bonus Payouts for Teachers	$17.4 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
Total Cost	**$17.4 million**	

Bonus payout calculations for alternative 2 are based on IMPACT Bonus Payouts from school year 2017-18. Individuals were given a new bonus payout based on alternative 2's new bonus structure. For example, teachers in high-poverty schools who received $10,000 in alternative 1 were estimated to receive $15,000 in alternative 2. Because alternative 2 only modifies the IMPACT bonus payout structure, administrative costs for alternative 2 remain the same as alternative 1.

ALTERNATIVE 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS) [Low Range Cost]

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[16]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
School-Based Performance Bonus[17]	$689,000	Estimated using DCPS' 2018 CS schools list, (Kelley, 1998), the Common Core of Data (CCD) from the U.S Department of Education[18], and the 2017-18 STAR Framework ratings
Resource Bonus	3 schools X $10,000 = $30,000	Estimated using DCPS' 2018 CS Schools List
Total Lower Range Cost	**$12.9 million**	

Within the first year of Kentucky's school-based performance award system, 40% of school exceeded their performance target and receive performance awards. To calculate school-based performance bonuses at DCPS, the author estimated 40% (3) of CS schools receiving awards in the first year. The number of teachers at each school, using the Full-Time Equivalent (FTE) counts from the CCD, was multiplied by $5,000 to estimate the school-based performance bonus. Three DCPS CS school were selected using random simulation, and the bonus amounts of each random simulation was averaged. Note this cost estimates may be higher if more schools improve than anticipated.

[16] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.
[17] Teacher payouts for 3 CS Schools
[18] https://nces.ed.gov/ccd/stnfis.asp

ALTERNATIVE 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS) [High Range Cost]

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[19]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
School-Based Performance Bonus[20]	$2 million	Estimated using DCPS' 2018 CS schools list, (Kelley, 1998), the Common Core of Data (CCD) from the U.S Department of Education[21], and the 2017-18 STAR Framework ratings
Resource Bonus	8 schools X $10,000 = $80,000	Estimated using DCPS' 2018 CS Schools List
Total Higher Range Cost	**$14.2million**	

If all 8 CS schools improve their score and receive financial awards, the estimated cost is represented above.

[19] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.
[20] Teacher payouts for 8 CS Schools
[21] https://nces.ed.gov/ccd/stnfis.asp

ALTERNATIVE 4: Add-On Bonus for National Board Certified Teachers (NBCT)

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[22]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
Add-On Bonus Payouts for NBCTs	$332,000	Estimated using the NBPTS State Profile: District of Columbia (NBPTS, 2018)
Total Cost	**$12.5 million**	

As of 2018, DCPS has 57 NBCTs and 9 teachers pursuing Board certification. The additional bonus payouts for NBCTs was calculated using data from the NBPTS[23] and average state estimates of NBCTs in high-poverty schools.

[22] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.
[23] Note this data is based on self-reported information as of December 7, 2018

APPENDIX E: ADMINISTRATIVE COST CONSIDERATIONS

The following are the cost assumptions including administrative cost to consider when implementing Alternative 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS) and Alternative 4: Add-On Bonus for National Board Certified Teachers (NBCT). Administrative costs for Alternative 1: Maintain Current IMPACT Bonus Structure and Alternative 1: Restructure Bonus Payouts for High-Poverty Schools will remain the same.

ALTERNATIVE 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS) [Low Range Cost]

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[24]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
School-Based Performance Bonus[25]	$689,000	Estimated using DCPS' 2018 CS schools list, (Kelley, 1998), the Common Core of Data (CCD) from the U.S Department of Education[26], and the 2017-18 STAR Framework ratings
Resource Bonus	3 schools X $10,000 = $30,000	Estimated using DCPS' 2018 CS Schools List
Administrative Cost	$11 million	Estimated using Kentucky's KIRIS system and (Stecher et al., 1997)
Total Lower Range Cost	**$23.9 million**	

Within the first year of Kentucky's school-based performance award system, 40% of school exceeded their performance target and receive performance awards. To calculate school-based performance bonuses at DCPS, the author estimated 40% (3) of CS schools receiving awards in the first year. The number of teachers at each school, using the Full-Time Equivalent (FTE) counts from the CCD, was multiplied by $5,000 to estimate the school-based performance

[24] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.
[25] Teacher payouts for 3 CS Schools
[26] https://nces.ed.gov/ccd/stnfis.asp

bonus. Three DCPS CS school were selected using random simulation, and the bonus amounts of each random simulation was averaged. Administrative cost was estimated using the National Center for Research in Vocational Education's cost estimates for the Kentucky KIRIS system. The cost of developing, administering, scoring, and reporting to schools and state cost about $6 million per year in 1991, which is about $11 million per year in 2018 dollars[27]. Note this cost estimates may be higher if more schools improve than anticipated. For example, if all 8 CS schools improve their score and receive financial awards, the estimated cost is represented below. School-based performance bonuses and resource bonuses were estimated similarly to the cost description above.

ALTERNATIVE 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS) [High Range Cost]

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[28]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
School-Based Performance Bonus[29]	$2 million	Estimated using DCPS' 2018 CS schools list, (Kelley, 1998), the Common Core of Data (CCD) from the U.S Department of Education[30], and the 2017-18 STAR Framework ratings
Resource Bonus	8 schools X $10,000 = $80,000	Estimated using DCPS' 2018 CS Schools List
Administrative Cost	$11 million	Estimated using Kentucky's KIRIS system and the National Center for Research in Vocational Education (1997)
Total Higher Range Cost	**$25.2 million**	

[27] $\$6\ million\ \left(\frac{CPI_{2018}}{CPI_{1991}}\right) = \left(\frac{251}{136}\right) = \$11\ million$ in 2018 dollars

[28] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.

[29] Teacher payouts for 8 CS Schools

[30] https://nces.ed.gov/ccd/stnfis.asp

ALTERNATIVE 4: Add-On Bonus for National Board Certified Teachers (NBCT)

Assumptions	Amount	Source
Total Bonus Payouts for Teachers[31]	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
Add-On Bonus Payouts for NBCTs	$332,000	Estimated using the NBPTS State Profile: District of Columbia (NBPTS, 2018)
Administrative Costs	$13.4 million	(Goldhaber, Perry & Anthony, 2003)
Total Cost	**$25.9 million**	

As of 2018, DCPS has 57 NBCTs and 9 teachers pursuing Board certification. The additional bonus payouts for NBCTs was calculated using data from the NBPTS[32] and average state estimates of NBCTs in high-poverty schools. The administrative cost of a similar program in North Carolina cost about $9.2 million per year in 2000, which is about $13.4 million per year in 2018 dollars[33].

[31] This includes total bonus payouts for Highly Effective teachers at low-poverty schools and high-poverty schools. Additional $10,000 bonuses for teachers at Targeted 40 schools are removed.

[32] Note this data is based on self-reported information as of December 7, 2018

[33] $\$9.2\ million\ \left(\frac{CPI_{2018}}{CPI_{2000}}\right) = \left(\frac{251}{172}\right) = \$13.4\ million$ in 2018 dollars

APPENDIX F: POLITICAL VIABILITY SCORES

Each stakeholders' likely response to each alternative are captured on a scale of strong opposition (-2), slight opposition (-1), neutral (0), slight support (1), and strong support (2). To capture individual stakeholder scores, each was given a proportional weighting score corresponding to their influence over the IMPACT evaluation system. Given the political climate on teacher compensation, the WTU has the most weight for political viability, followed by Chancellor Ferebee because of his role. OSSE has the least influence over IMPACT, however must be considered because of its jurisdiction over DCPS.

Chancellor Ferebee	35% (0.35)
WTU	50% (0.50)
OSSE	15% (0.15)

Overall political viability scores were calculated by multiplying the stakeholder's response by its proportional weight and summing the response scores of all three stakeholders for each option. The calculations for each alternative are below:

ALTERNATIVE 1: Maintain Current IMPACT Bonus Structure (Status Quo)

Stakeholder	Score	Weight
Chancellor Ferebee	1	0.35
WTU	1	0.5
OSSE	0	0.15

Political Viability Score = [1*0.35] + [1*0.5] + [*0*0.15] = 0.85 (Slightly Support)

ALTERNATIVE 2: Restructure Bonus Payouts for High-Poverty Schools

Stakeholder	Score	Weight
Chancellor Ferebee	1	0.35
WTU	1	0.5
OSSE	0	0.15

Political Viability Score = [1*0.35] + [1*0.5] + [*0*0.15] = 0.85 (Slightly Support)

ALTERNATIVE 3: **School-based Performance Award System for Comprehensive Support and Improvement Schools (CS)**

Stakeholder	Score	Weight
Chancellor Ferebee	-1	0.35
WTU	-1	0.5
OSSE	2	0.15

Political Viability Score = [-1*0.35] + [-1*0.5] + [2*0.15] = -0.55 (Slightly Oppose)

ALTERNATIVE 4: **Add-on Bonus for National Board Certified Teachers (NBCT)**

Stakeholder	Score	Weight
Chancellor Ferebee	1	0.35
WTU	2	0.5
OSSE	1	0.15

Political Viability Score = [1*0.35] + [2*0.5] + [1*0.15] = 1.5 (Strongly Support)

APPENDIX G: OUTCOMES SCORING

Overall outcome scores were calculated by multiplying each criterion score by its proportional weight and summing the scores for each policy alternative. The highest score represents the most favored alternative. The calculations for each alternative are below:

	Cost (40%)	Effectiveness (30%)	Political Viability (15%)	Fairness/Equity (15%)
Alternative 1: Maintain Current IMPACT Bonus Structure (Status Quo)	$16.3 Million (2)	High Likelihood (3)	Score: 0.85 Slightly Support	High (3)
	Overall Score = [2*0.40] + [3*0.30] + [0.85*0.15] + [3*0.15] = **2.3**			
Alternative 2: Restructure Bonus Payouts for High-Poverty Schools	$17.4 Million (1)	Sufficient Likelihood (2)	Score: 0.85 Slightly Support	Moderate (2)
	Overall Score = [1*0.40] + [2*0.30] + [0.85*0.15] + [2*0.15] = **1.4**			
Alternative 3: School-Based Performance Award System for Comprehensive and Improvement Schools (CS)	$12.9 Million – 14.2 Million (3)	Limited Likelihood (1)	Score: - 0.55 Slightly Oppose	Moderate (2)
	Overall Score = [3*0.40] + [1*0.30] + [-.55*0.15] + [2*0.15] = **1.7**			
Alternative 4: Add-On Bonus for National Board Certified Teachers (NBCT)	$12.5 Million (4)	Sufficient Likelihood (2)	Score: 1.5 Strongly Support	Moderate (2)
	Overall Score = [4*0.40] + [2*0.30] + [1.5*0.15] + [2*0.15] = **2.7**			

APPENDIX H: OTHER ALTERNATIVE OPTIONS

The alternatives presented in the core analysis were the best options for each type of alternative. Below are other alternative options that were considered.

ALTERNATIVE 2A: Restructure Bonus Payouts for High-Poverty Schools [Reduce Total Bonus by $10,000]

In this policy alternative, DCPS will no longer provide an additional $10,000 award for Highly Effective teachers in Targeted 40 schools. By removing Targeted 40 bonuses, teachers can no longer receive a total possible annual bonus of $25,000. Instead, the total possible annual bonus a Highly Effective teacher at a high-poverty school can receive is $15,000 (see Figure 12). Bonus amounts for Highly Effective teachers in low-poverty schools will remain the same as alternative 1 (status quo). Teachers will only receive bonuses if they return to DCPS the following year.

FIGURE 12: Alternative 2A Modifications to Bonus Payouts

Status Quo:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR ADD-ON IF YOU ARE IN ONE OF THE 40 TARGETED SCHOOLS	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	Additional $10,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	n/a	$3,000

Alternative 2A:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	$15,000
	Low-Poverty	$2,000	Additional $1,000	$3,000

EVALUATING ALTERNATIVE 2A: Restructure Bonus Payouts for High-Poverty Schools [Reduce Total Bonus by $10,000]

Cost

This alternative is estimated to cost DCPS about *$12.1 million* on bonus payouts for teachers across the district.

ALTERNATIVE 2A: Cost Assumptions

Assumptions	Amount	Source
Total Bonus Payouts for Teachers	$12.1 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
Total Cost	**$12.1 million**	

Bonus payout calculations for alternative 2A are based on IMPACT Bonus Payouts from School Year 2017-18. Individuals were given a new bonus payout based on alternative 2A's new bonus structure. For example, teachers in high-poverty schools who received $25,000 in alternative 1 were estimated to receive $15,000 in alternative 2A. Because alternative 2A only modifies the IMPACT bonus payout structure, administrative costs for alternative 2A remain the same as alternative 1.

Effectiveness at Maximizing the Share of Highly Effective Teachers

This alternative will continue to incentivize Highly Effective teachers at low- and high-poverty schools through annual bonuses awarded when the teacher returns the following school year. However, teachers who were already teaching in Targeted 40 schools will be receiving $10,000 less in bonuses than previously. As a result, a $10,000 decrease in total bonuses for Highly Effective teachers at high-poverty schools may reduce or maintain the number of Highly Effective teachers comparted to alternative 1. There is *limited likelihood* this option will maximize the share of Highly Effective teachers.

ALTERNATIVE 2B: Restructure Bonus Payouts for High-Poverty Schools [Increase Bonuses for High-Poverty Teachers by $10,000]

In this policy alternative, DCPS will no longer provide an additional $10,000 award for Highly Effective teachers in Targeted 40 schools and instead increase bonuses for all Highly Effective teachers in high-poverty schools by $10,000. By removing Targeted 40 bonuses and increasing the award for Highly Effective teachers by $10,000, the total possible annual bonus remains at $25,000 (see Figure 13). Bonus amounts for Highly Effective teachers in low-poverty schools will remain the same as alternative 1 (status quo). Teachers will only receive bonuses if they return to DCPS the following year.

FIGURE 13: Alternative 2B Modifications to Bonus Payouts

Status Quo:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR ADD-ON IF YOU ARE IN ONE OF THE 40 TARGETED SCHOOLS	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$10,000	Additional $5,000	Additional $10,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	n/a	$3,000

Alternative 2:

YOUR IMPACT RATING	YOUR SCHOOL'S POVERTY LEVEL	YOUR BONUS	YOUR ADD-ON IF YOU ARE IN IMPACT GROUP 1 OR 1a	YOUR TOTAL POSSIBLE ANNUAL BONUS
Highly Effective	High-Poverty	$20,000	Additional $5,000	$25,000
	Low-Poverty	$2,000	Additional $1,000	$3,000

EVALUATING ALTERNATIVE 2B: Restructure Bonus Payouts for High-Poverty Schools [Increase Bonuses for High-Poverty Teachers by $10,000]

Cost

This alternative is estimated to cost DCPS about *$22.6 million* on bonus payouts for teachers across the district.

ALTERNATIVE 2B: Cost Assumptions

Assumptions	Amount	Source
Total Bonus Payouts for Teachers	$22.6 million	Estimated using DCPS IMPACT Bonus Payouts from School Year 2017-18
Total Cost	**$33.4 million**	

Bonus payout calculations for alternative 2B are based on IMPACT Bonus Payouts from School Year 2017-18. Individuals were given a new bonus payout based on alternative 2B's new bonus structure. For example, teachers in high-poverty schools who received $10,000 in alternative 1 were estimated to receive $20,000 in alternative 2B. Because alternative 2B only modifies the IMPACT bonus payout structure, administrative costs for alternative 2B remain the same as alternative 1.

Effectiveness at Maximizing the Share of Highly Effective Teachers

This alternative will continue to incentivize Highly Effective teachers at DCPS through annual bonuses awarded when the teacher returns the following school year. Highly Effective teachers at high-poverty schools will be more given a higher bonus, and therefore will be more incentivized to remain in those schools. Overall, DCPS currently provides the highest bonuses across the country. It is *very highly likely* this option will maximize the share of Highly Effective teachers.