J. Sickler Consulting

# Maryland Green Schools: Progress toward Statewide Goals

## School Year 2020-21

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GREEN SCHOOLS
MAEOE

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# Background

## Study Purpose & Methods

# Context for Evaluation: Maryland Green Schools

*Image courtesy of MAEOE*

**About Maryland Green Schools**

The Maryland Green Schools (MDGS) program is a sustainable schools award program and is the signature program of the Maryland Association for Environmental and Outdoor Education (MAEOE). The program began in 1999 and has expanded throughout 23 of Maryland's 24 school districts. The MDGS program provides infrastructure, support, and a rigorous review process to any school in Maryland, offering the opportunity to be awarded status as a sustainable school, and carrying the recognition and title of a Maryland Green School.

The MDGS program has been essential to Maryland's ability to connect with goals of the Chesapeake Bay Watershed Agreement, as well as helping schools achieve the state educational standards and requirements for environmental literacy (COMAR 13A.04.17 – Environmental Literacy Instructional Programs for Grades Prekindergarten – 12).

**State Funding & MDGS Goal**

In 2020, the "Maryland Green Schools Act of 2019" was passed, which provided funding to MAEOE to expand efforts to support schools toward sustainability. This included **a goal of supporting 50% of all schools in Maryland to be awarded the status of Maryland Green Schools by 2026.**

As part of this support network, MAEOE has developed a network of 42 Green Centers to support green schools locally. Partnerships form an important part of the program structure, but also as an infrastructure mechanism for the program administration. MAEOE receives approximately 150 applications a year, 1/5 are new schools.

Over the five years of this funding, external evaluation will examine the degree to which the funding has: (i) increased support for the development of Green Schools, (ii) provided PD to more teachers, and (iii) increased students' environmental literacy. In year one, evaluation focuses closely on progress on the first metric. Later years will address the second and third outcome in more detail.

# Year 1 Evaluation: Maryland Green Schools

### Evaluation Questions

For its first year, evaluation began with a quantitative assessment of the progress of MDGS against the first goal of the state funding, examining several indicators:

1. **What is current progress toward the goal?**
   - Rate of new awards? Maintained Green School status?
   - To what extent does MDGS experience "lapsed" awards? Are there patterns in which types of schools let their Green School status lapse or expire?
   - How are schools distributed over the award levels / lifecycle of the program?
2. **Are there patterns in which schools are or are not Green Schools based on school-level characteristics?**
3. **What is the collective impact of MDGS?**
   - Student reach
   - Environmental metrics from 2021

### Evaluation Data Sources

Because the program is targeting its reach across the state, it was critical to establish a baseline understanding of characteristics of the current population of Maryland Green Schools, compared against the full population of schools in the state of Maryland. As the program looks to expand, it is important to know which types of schools *are not* currently served by the MDGS program, in order to improve outreach, support, and strategy over the next four years.

This quantitative analysis drew upon several data sources:

- MDGS historic records of all schools current or previously awarded and their most recent status;
- Data on all public schools in Maryland, accessed via the National Center of Educational Statistics (NCES), 2018 was the most recent data set available;
- Data on all private schools in Maryland, collected via the NCES' bi-annual Private School Survey;
- Environmental metrics reported in applications for 2021 MD Green Schools.

### Evaluation Analysis

Analysis of these data involved an extensive process of data wrangling, cleaning, and merging in order to comparatively analyze the current MDGS data against the state-collected data for public and private schools. As all entities collect data and metrics in slightly different ways, data were systematically cleaned, reviewed, and double-checked to enable merging of the data files.

From this combined data set, the analysis in this report examines the full set of currently awarded MDGS schools (whether they were awarded in 2021 or a prior year) against the population of all schools in Maryland. Within various school characteristics (public/private, grade level, location, etc.), we compared the rates of MDGS awards, looking for areas of strength in the population of current Green Schools and for areas of opportunity for MDGS to expand.

**Because of a great disparity in the rate of Green Schools in public and private schools, we analyze and report results for those two groups separately for much of this report.**

# Context for Evaluation: COVID-19 Adjustments

**Program Adjustments Due to COVID-19**

The COVID-19 pandemic hit all schools extremely hard in 2020-21. The MDGS program made accommodations to support and provide flexibility to schools to continue their progress toward sustainability goals, while acknowledging the substantial and wide-ranging challenges that the pandemic created.

First, the MDGS program modified elements of the application to be flexible, particularly around expectations that had likely been impossible due to remote learning and social distancing requirements in 2020-21. Schools applying this year only had to meet these relaxed parameters.

Second, the MDGS program instituted a flexible extension policy for 2021, which will be extended through 2022. While all schools can request a one-year extension to their re-award timeline, in 2021 all schools were automatically granted an additional year "grace period" to all schools that had applications due but did not submit.

**Impact of Program Adjustments**

As a result of these adjustments, MAEOE received fewer applications than it would have in a non-COVID year. However, the MDGS program will not see an impact on drop of overall award rates in this year or next year's reports. The extended grace period for schools allows all former MDGS schools to maintain their most recent status for at least an additional two years.

The potential impact of COVID-19 on rates of awarded Green Schools won't be fully measurable until the end of the 2023 school year, when the program will see if those schools who needed the grace period are able to reestablish their sustainable school practices and submit their re-award applications at the end of the coming year.

This timing will allow the MDGS program to provide targeted support to those schools who are in their "grace period," as they are known to be potentially at risk for having their award status lapse, and being forced to restart the full application and award cycle in a future year.

# Results

## Progress Toward 50% Goal

# Number of Maryland Green Schools

**In 2021 there were at least 663 Maryland Green Schools (MDGS).**

These 663 schools include all of those that were in good standing with MDGS's current award guidelines and based on the data provided to evaluators on June 17, 2021. This includes schools whose awards are up-to-date and active within the standard 4-year award cycle, as well as 127 schools that are in an extension period.

Since the initiation of the program, another 169 schools (that are still open and operating) were awarded at some point in the past. If these schools wanted to pursue award again, they would need to re-start the process.

MDGS program guidelines require re-awarding every four years. As noted in the Background section, due to the impacts of COVID-19, MDGS gave an automatic extra year grace period to any school that needed it. The "extension" category in these data reflect this flexibility. These 127 schools are likely in need of careful targeting and potentially support during an upcoming year as they are more at risk to let their award status lapse when the extended grace period is lifted.

## There are 663 Maryland Green Schools

This includes awarded, renewed, sustainable, and those in their extension period.
Another 169 schools were previously awarded Green Schools, but have allowed their status to lapse.


**All analyses in this report are based on data received from the MDGS program on June 17, 2021. Schools "in extension" were verified as those who were awarded/re-awarded in 2016 or 2017, in accordance with the policy for extensions described on page 6.*
*Any schools currently listed as "closed" in either MDGS or state records were removed from any counts and analyses. Any updates or changes to the status of awarded Green Schools list (e.g., listed on the MAEOE website) made since June 17 will not be reflected in this report. Those schools' data will be included in 2022 reporting.*

# Status within the MDGS Award Lifecycle

**The current Green Schools are spread across the lifecycle of awards as a MD Green School.**

The data show that about one-third of the current Green Schools are under their first award in the program, and about one-third have proceeded through their first re-awarding process. About 20% of the schools have completed their second re-awarding.

There are 16% of Green Schools that have already achieved the level of Sustainable School, which was a third re-awarding.

In the 2021-22 school year, MDGS is creating a new process and levels for Sustainable Schools to continue their award process, as part of an effort to ensure schools are continuing to prepare students to meet new challenges and to provide assistance to schools that need extra support. Between 2022 and 2024, MDGS will support schools who were awarded Sustainable status (third re-award) to move toward the Bronze, Silver, Gold, and Evergreen levels of Sustainable awards. Tracking of this progression will be part of future evaluation.

## Where Schools are in the Green School Award Lifecycle

The distribution of all current Green Schools (n=663), and what phase of the process most recently achieved, from initial award through reaching sustainable status

# Progress of MDGS Statewide: Public & Private

**As of 2021, one-third of all schools in the state of Maryland are Maryland Green Schools.**

The goal of the MDGS program is to reach 50% of all schools awarded as Green Schools by 2026. The 33% achieved in 2021 is a slight increase from the aggregate reported in 2020 (just under 30%). It also highlights the distance to cover to meet the goal.

33% Green Schools is computed against all schools in Maryland reported in the most recent publicly available dataset (NCES, 2018 data). This included state data on public and private schools. In cases where a school was included as a Green School but *not* in the public dataset (typically an issue with private schools), an entry was added for that school, to ensure each Green School was also counted among all Maryland Schools. Schools recorded as closed were excluded from all calculations and analyses.

This aggregate only tells a small part of the story. The remainder of this report will more deeply explore differences in the characteristics of which schools in Maryland are currently awarded and where the program might need to place more attention to advance toward its 50% goal.

**One-third of all schools in Maryland are Green Schools**

This includes awarded, sustainable, and those in their extension period.
This total includes both public and private schools.

# Progress Statewide: Public versus Private

**The MDGS program has had dramatically greater success among public schools than among private schools, with 42% of all public schools already awarded as Green Schools.**

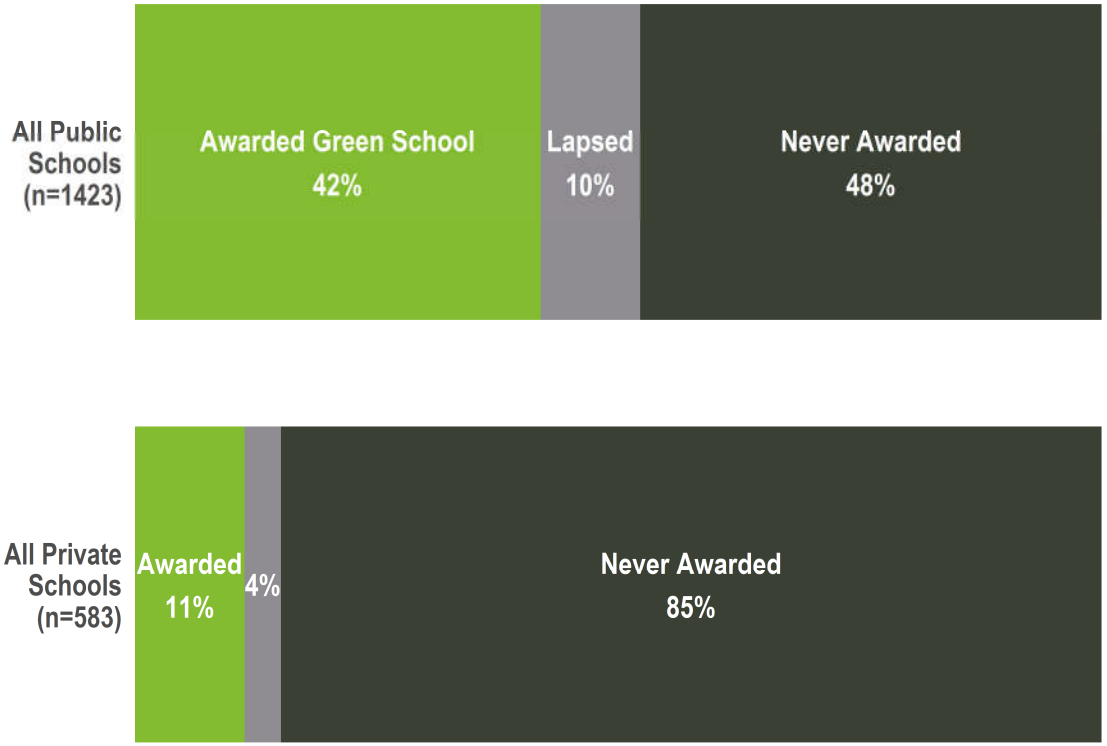
MDGS has been much more successful at gaining traction within public schools. Of the 1,400+ public schools in Maryland, 42% are already Green Schools, which is only eight percentage points below the overall target for 2026. Another 10% of public schools previously had Green School awards, but lapsed over the years.

While there are far fewer private schools in the state, the rate of penetration into this group is much lower (only 11% are awarded). This substantial disparity raises questions about whether public and private schools have different needs, interests, or priorities when it comes to considering MDGS applications.

Given these stark differences, the remainder of **this report explores the data for public schools and private schools separately.** In the next section, we explore data from public schools in detail; after that, we explore the data from private schools.

**Maryland Green Schools have stronger reach in public schools.**

Comparing the proportion of current Green Schools within each type of school (public and private)



# Results

## Progress in Public Schools

# Public: MDGS Distribution across Grade Levels

**Of the nearly 600 public schools that are currently Green Schools, almost two-thirds are at the elementary school level.**

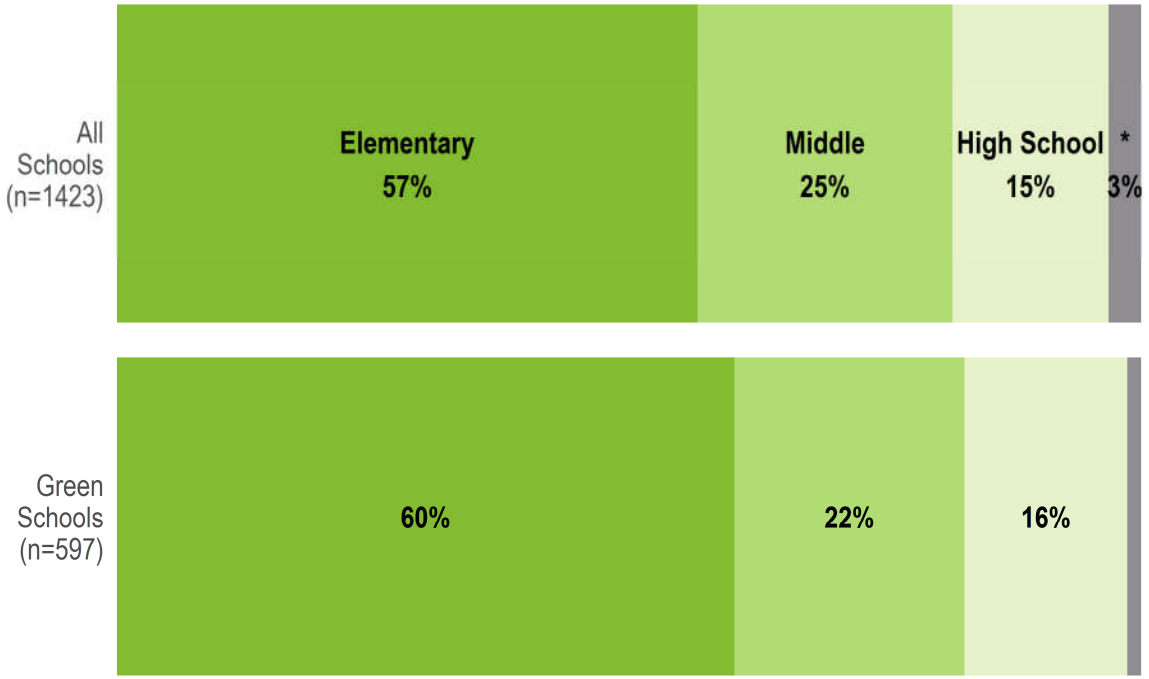
These proportions are generally very similar to the distribution of grade-levels across the state, as there are far more individual schools at the elementary level than at the upper grade levels. **Around 57% of all public schools in the state of Maryland are elementary schools, which indicates the MDGS program does not have a substantial skewing at serving different grade levels.**

However, there is also robust representation of middle and high schools in the population of Green Schools.

On the next page, we explore the award rates within each grade band in more detail to further illustrate this conclusion.

## Distribution of Public Green Schools by Grade Level

The proportion of all public schools that are awarded that are from each grade band.
Note: 'Middle School' includes schools that are ES/MS and MS/HS for this graphic.




*Gray is schools serving All Grades (ES, MS, and HS) or Ungraded (e.g., special ed, technical, etc.), as coded by state

# Public: MDGS Reach within Grade Levels

**Looking at the rate of reach of MDGS within each grade level, relative to the population of schools in Maryland, it confirms that the program is relatively balanced in its reach by grade level.**

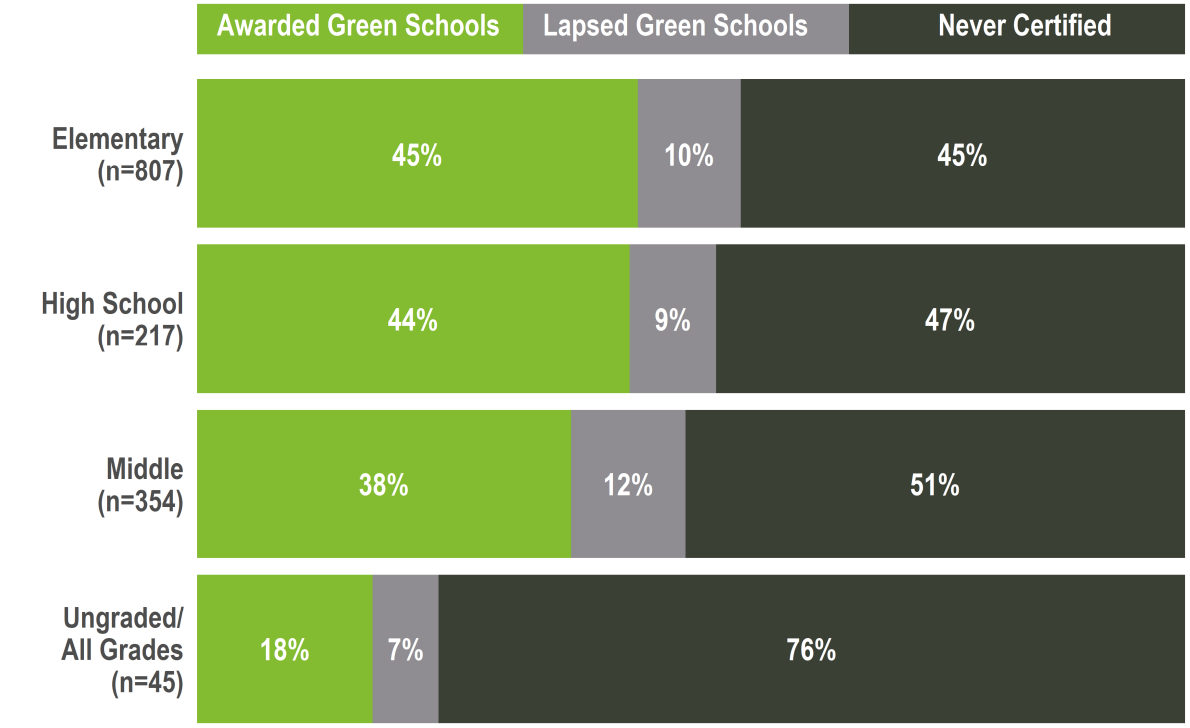
Within each individual grade band, we see that between 38% and 45% of schools are Maryland Green Schools. The rate is slightly higher for elementary and high schools, but only slightly.

Green Schools have had less reach in schools that serve a very wide range of grades (e.g., K-12) or are noted as "ungraded" in state records. These are often non-traditional schools and/or student populations (e.g., special education, technical, etc.), and they comprise a very small proportion of schools. As a result, this lower level of penetration makes little difference in progress statewide.

In this analysis, middle school includes schools that span slightly beyond 6-8th grades (e.g., K-8 and 6-12). There are few schools in these groups, so we combined them for the purpose of understanding the overall patterns.

**MD Green Schools have reached ~40% of schools in each grade band.**

Comparing the proportion of schools that are Green Schools, by each grade level of public schools




*Note: 'Middle School' contains overlapping grade bands of MS/HS and ES/MS*

# Public Schools: MDGS Reach by County

**Rates of Green School achievement vary widely by county. Queen Anne's County and Calvert County have been extremely successful, with essentially all public schools awarded Green School status.**

There are eight counties (one-third of all counties in Maryland) where MDGS has already achieved the benchmark of 50% Green Schools among the public schools in the county.

In contrast, there are eight counties where fewer than one-third of schools are Green Schools. This includes two counties, where the program does not have any *currently* Green Schools (Dorchester and Somerset Counties), although both have had schools that were awarded previously.

Another eight schools are in the middle of this range, with between 36% and 48% of public schools awarded by the MDGS program.

The following page presents a heat map of the state showing these relative percentages geographically.

| County | Awarded | Lapsed | Never Awarded |
|---|---|---|---|
| Calvert County (n=23)* | **100%** | 0% | 0% |
| Queen Anne's County (n=14) | **100%** | 0% | 0% |
| Talbot County (n=8) | **75%** | 0% | 25% |
| Prince George's County (n=206) | **64%** | 0% | 36% |
| Howard County (n=77) | **60%** | 19% | 21% |
| Garrett County (n=12) | **58%** | 25% | 17% |
| St. Mary's County (n=28) | **50%** | 36% | 14% |
| Wicomico County (n=26) | **50%** | 0% | 50% |
| Cecil County (n=29) | **48%** | 7% | 45% |
| Anne Arundel County (n=124) | **46%** | 15% | 39% |
| Montgomery County (n=208) | **43%** | 7% | 50% |
| Charles County (n=38) | **39%** | 11% | 50% |
| Harford County (n=54) | **39%** | 28% | 33% |
| Carroll County (n=44) | **39%** | 32% | 30% |
| Baltimore County (n=176) | **37%** | 12% | 51% |
| Allegany County (n=22) | **36%** | 0% | 64% |
| Worcester County (n=14) | **29%** | 14% | 57% |
| Caroline County (n=10) | **20%** | 0% | 80% |
| Kent County (n=5) | **20%** | 0% | 80% |
| Baltimore City (n=168) | **20%** | 8% | 73% |
| Washington County (n=44) | **18%** | 9% | 73% |
| Frederick County (n=68) | **9%** | 12% | 79% |
| Dorchester County (n=12) | **0%** | 8% | 92% |
| Somerset County (n=9) | **0%** | 11% | 89% |

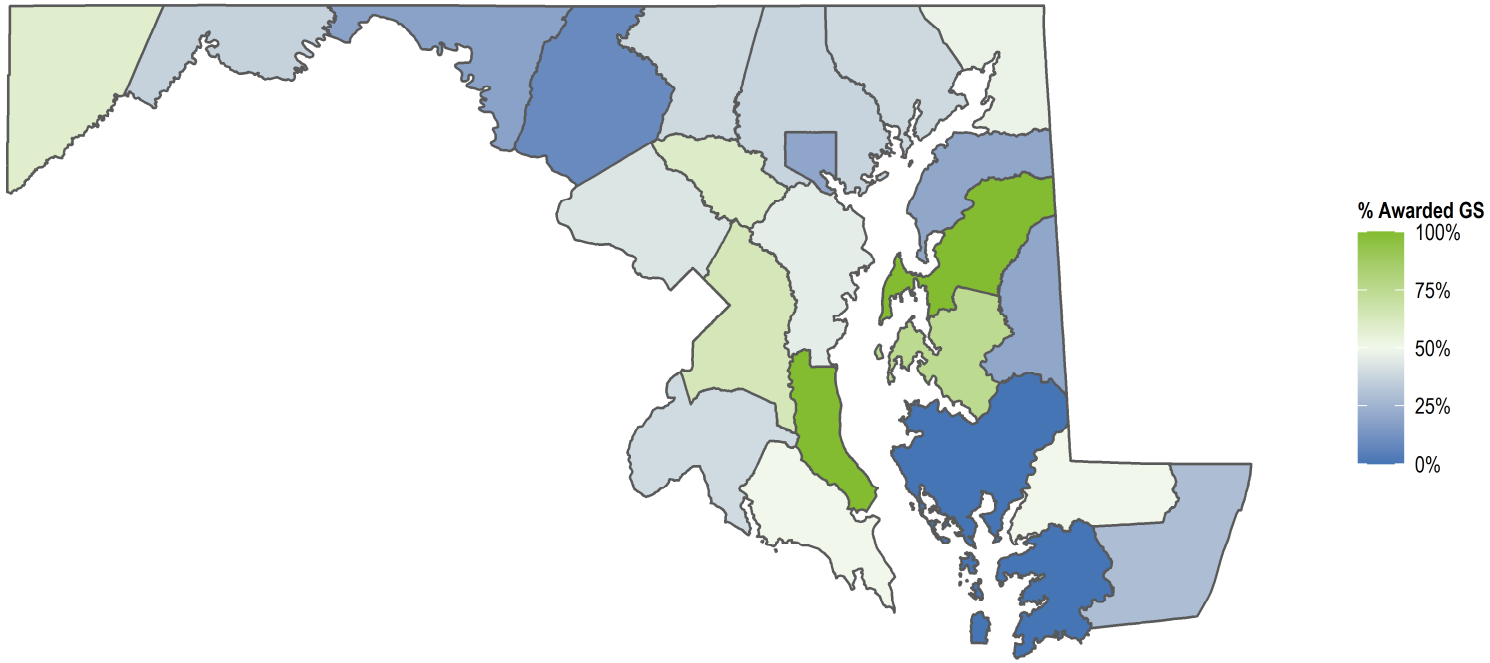
**One school from Calvert County that was in the NCES dataset was omitted from the calculations in this table; MAEOE and the county determined the CTE school was not a candidate for being a Green School and should not be counted in the percentage calculation.*

# Public Schools: MDGS Reach by County

**Proportion of public schools, by county, that are MD Green Schools**

This heat map depicts which counties have the highest percentage of their public schools awarded (bright green), and which counties have the lowest percentage of public school awarded (bright blue).

The region with the lowest engagement in the MDGS program appears to in the Eastern Shore area, as well as some counties in western Maryland.



# Public: Size of County and Award Rates

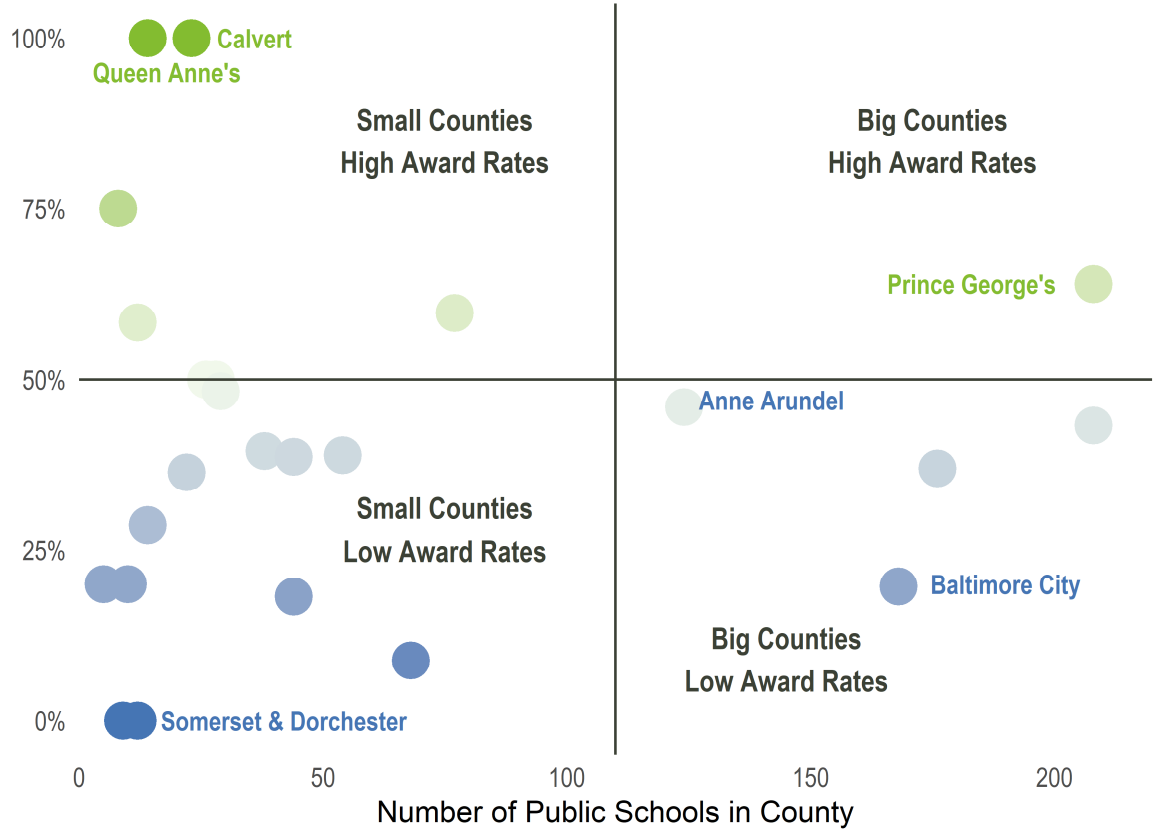
**MDGS Award Rates are evenly distributed across the smaller counties in Maryland – those with fewer than 100 public schools in the county. Award rates tend to hover just above and below 50% in the five large counties.**

Maryland's 24 counties vary widely in terms of the number of individual public schools contained within the county – from a low of just 5 schools in Kent County to a high of 208 schools in Montgomery County. Given this variation, this scatter plot explores whether there are any emergent relationships in the rates of MDGS awards based on this wide variation of county size.

In the smaller counties, award rates fall along a fairly normal distribution – including the highest rates (Queen Anne's and Calvert Counties) and the lowest rates (Somerset & Dorchester Counties). Among the large counties, MDGS has had greatest success in Prince George's County, where 64% of the 206 schools are Green Schools. Success has been lower in Baltimore City, with only 20% of the 168 schools awarded.

## Scatter Plot: Percentage of Green Schools by Size of County

Scatter plot to explore any patterns between the size of a county (in terms of number of public schools) and the percentage of those schools that have achieved Green School status



# Public: MDGS Reach in Urban/Rural Locations

**The MDGS program has had much greater success recruiting and awarding individual schools that are located in rural and suburban locations.**

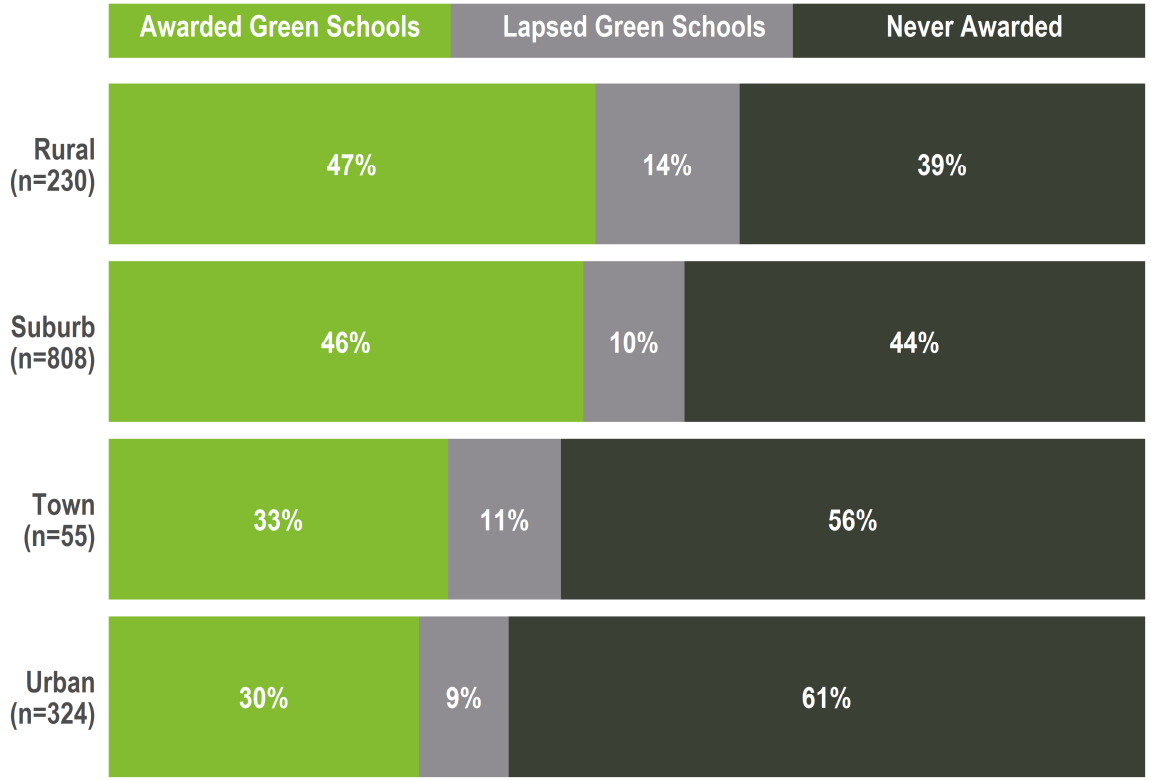
When we compare the extent of the MDGS program's reach within schools based on the Census classification of the individual school's location (as rural, urban, suburban, or a town), it is clear that the program has had greatest success in schools that are in rural and suburban areas. In both of these locale types, nearly half of public schools are already Green Schools (the goal of the program).

Compared with the prior pages, this highlights the differences at the individual school level, when compared with aggregate *county-* or *district-level* patterns. Schools classified as rural exist across nearly all Maryland counties.

In contrast, MDGS has the lowest reach into all schools in urban areas (30% of all urban public schools). These results may suggest that more targeted outreach to schools in urban areas could help increase the number of green schools overall.

**MD Green Schools have greatest reach in rural and suburban areas.**

Comparing the proportion of public schools that are currently awarded, by each locale type.



# Public: MDGS Reach by School Size

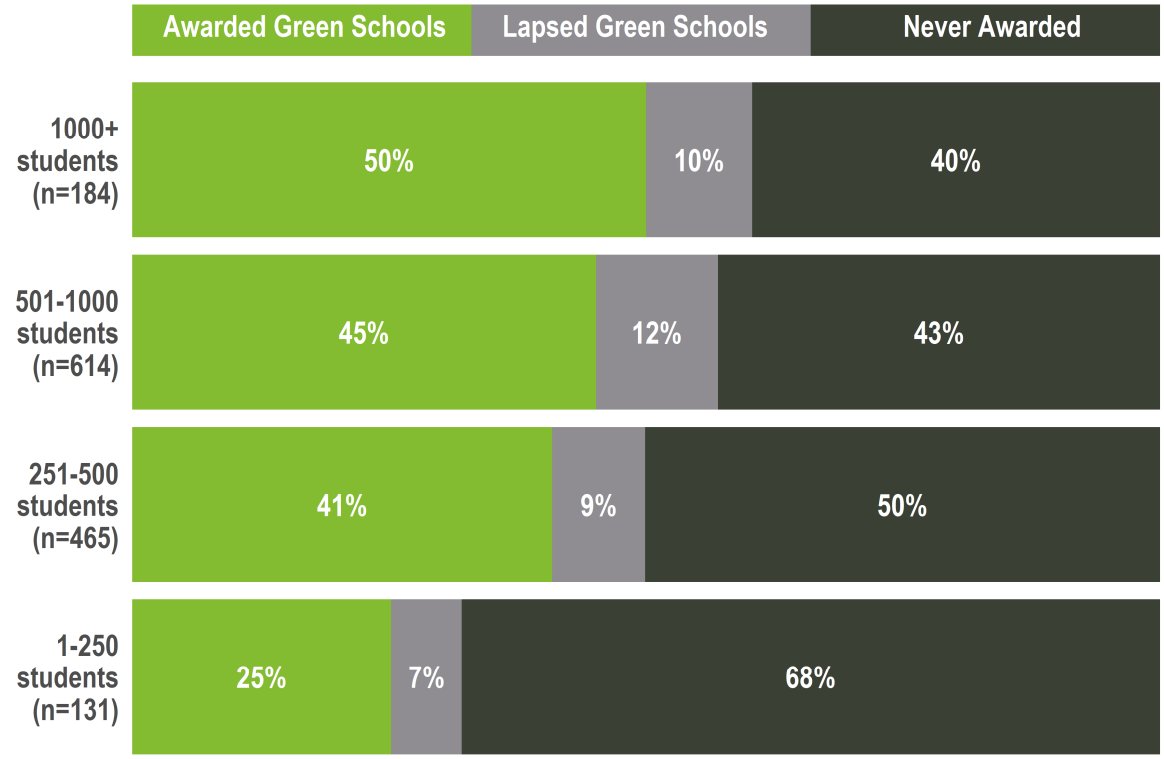
**Among public schools, the MDGS program has had greater success in larger schools. The average enrollment at a Green School is ~700 students, while the average enrollment at non-awarded schools is ~600 students.**

Looking at the reach of the MDGS program by groupings based on school size, we see a progressive increase in percentage of reach as schools get larger. MDGS has already reached more than 40% of all schools with over 250 students enrolled. Among the largest schools in Maryland (1,000+ students), the MDGS program has already awarded to more than half of those schools.

In contrast, the MDGS program has had far less reach into the very small public schools – those with fewer than 250 students. It may be worth further exploration to understand whether small schools have different motivations or concerns about becoming Green Schools, compared to the largest schools. It is also possible that these smaller schools represent more non-traditional populations of students.

**MD Green Schools have have had greatest reach into larger schools.**

Comparing the proportion of public schools that are currently awarded, by the size of the school (as defined by student enrollment numbers).



# Public: MDGS Reach in Title I Schools

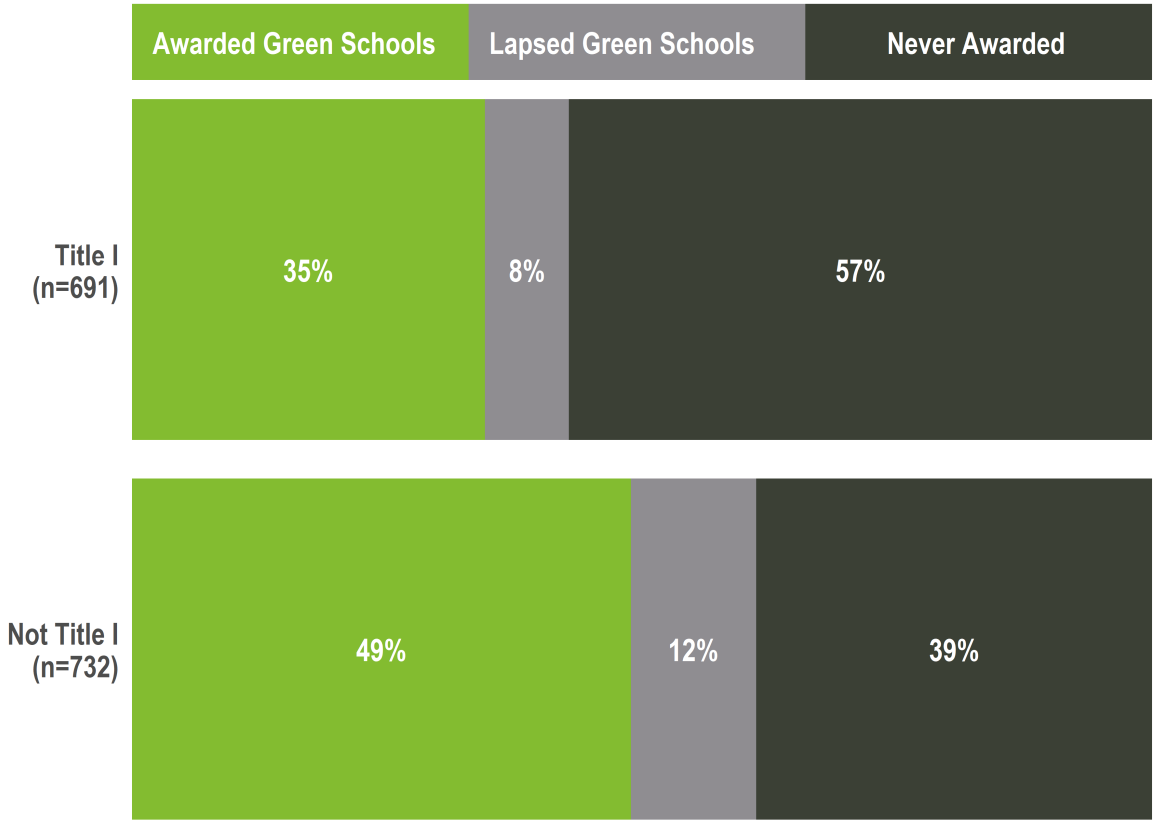
**The MDGS program has had much greater success recruiting and awarding schools that are not Title I schools, a designation used to identify schools with high rates of students from low-income families.**

To date, schools that are designated as Title I eligible are less likely to be Maryland Green Schools. The MDGS program has already nearly achieved the 50% benchmark among public schools that are *not* designated as Title I eligible; while reaching just over one-third of schools with this eligibility.

This could be related to the previous data showing lower reach in urban schools, and may suggest that schools with students facing economic and/or academic struggles have been less inclined to initiate the MDGS application process. It may be useful to try to learn from the Title I schools that *are* Green Schools if and how their leaders see MDGS the award as educationally supportive of their students and curricular goals to better engage future schools in this category.

**MD Green Schools have less reach into Title I schools.**

Comparing the proportion of schools that are currently awarded, by whether they are designated as Title I.



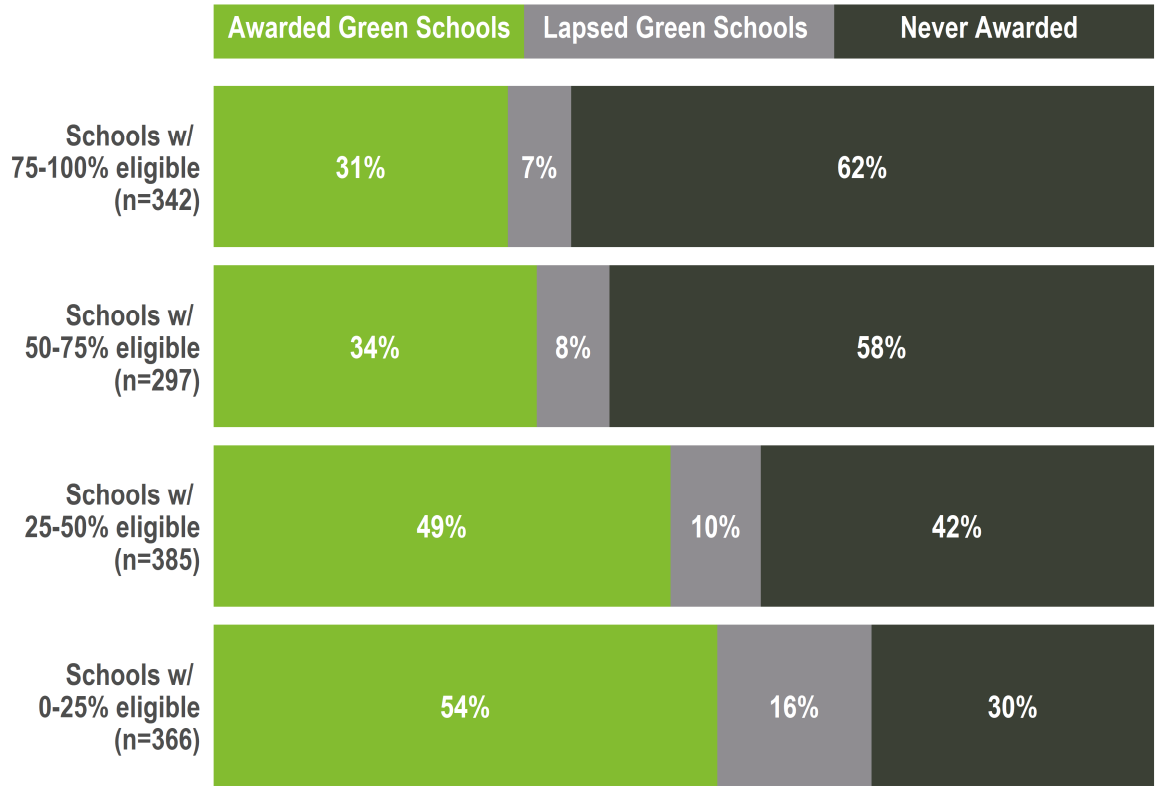
# Public: MDGS Reach based on FARM Eligibility

**The MDGS program has also had greater reach in schools were the majority of students are *not* eligible for free and reduced meal programs (an indicator of socio-economic status of families).**

These data are extremely similar to the breakdowns seen on the prior slide, of Title I status, as both are indicators of the school community's socioeconomic status. Again, the MDGS program currently has strongest presence in the schools in which the lowest proportion of students are eligible for free and reduced meal (FARM) programs. MDGS has actually exceeded its 50% benchmark among schools were fewer than a quarter of students are eligible for these programs.

**MD Green Schools have less reach in schools with high FARM eligibility.**

Comparing the proportion of schools that are currently awarded, by the percentage of students who are eligible for free and reduced meals (FARM).



# Results

## Progress in Private Schools

# Private: MDGS Distribution across Grade Levels

**Of the nearly 66 private schools that are around half are at the middle school level, which includes some schools that also cross into elementary or high school.**

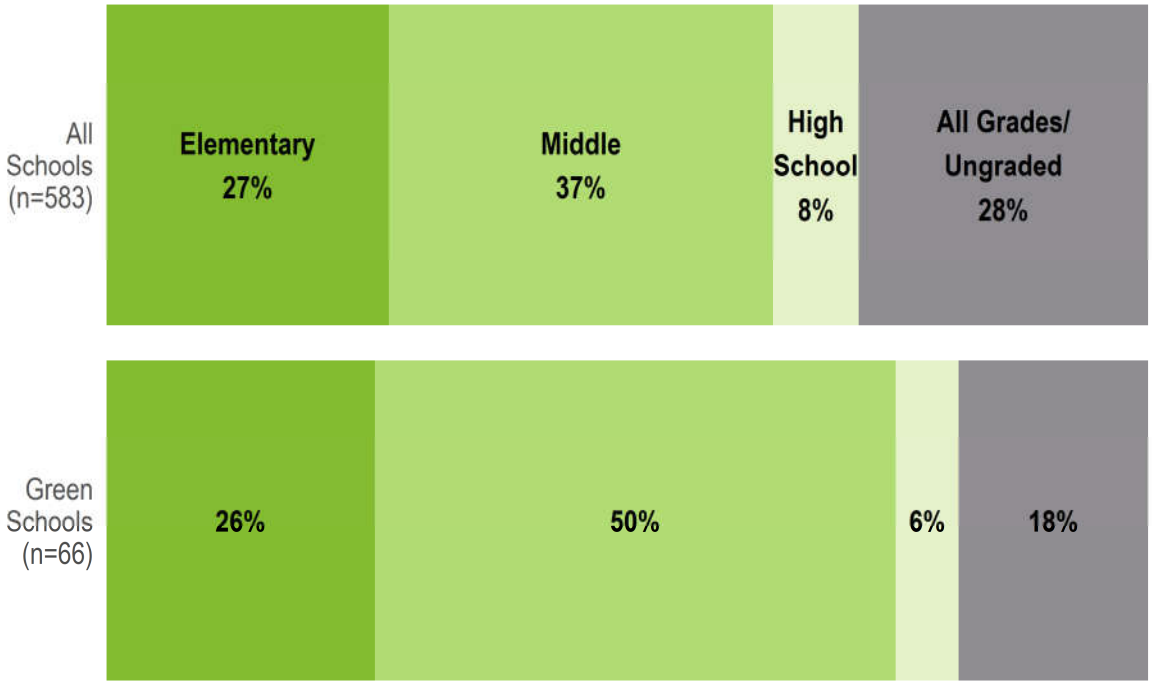
As with public schools, Maryland Green Schools are distributed across the grade levels in similar proportions as the population of private schools in state records.

The one exception is that Green Schools have a greater representative presence in middle schools. And lower presence among schools designated as serving all grades (e.g., elementary, middle, and high school levels in one school) or that are ungraded (i.e., other configurations that do not use standard grade levels).

Private schools often structure grades quite differently than public schools, including single schools spanning a much wider range of grade levels, which is why there is greater representation among schools that serve “all grades”.

**Distribution of Private Green Schools by Grade Level**

The proportion of all private schools that are awarded from each grade band.
Note: 'Middle School' includes schools that are ES/MS and MS/HS for this graphic.



# Private: MDGS Reach within Grade Levels

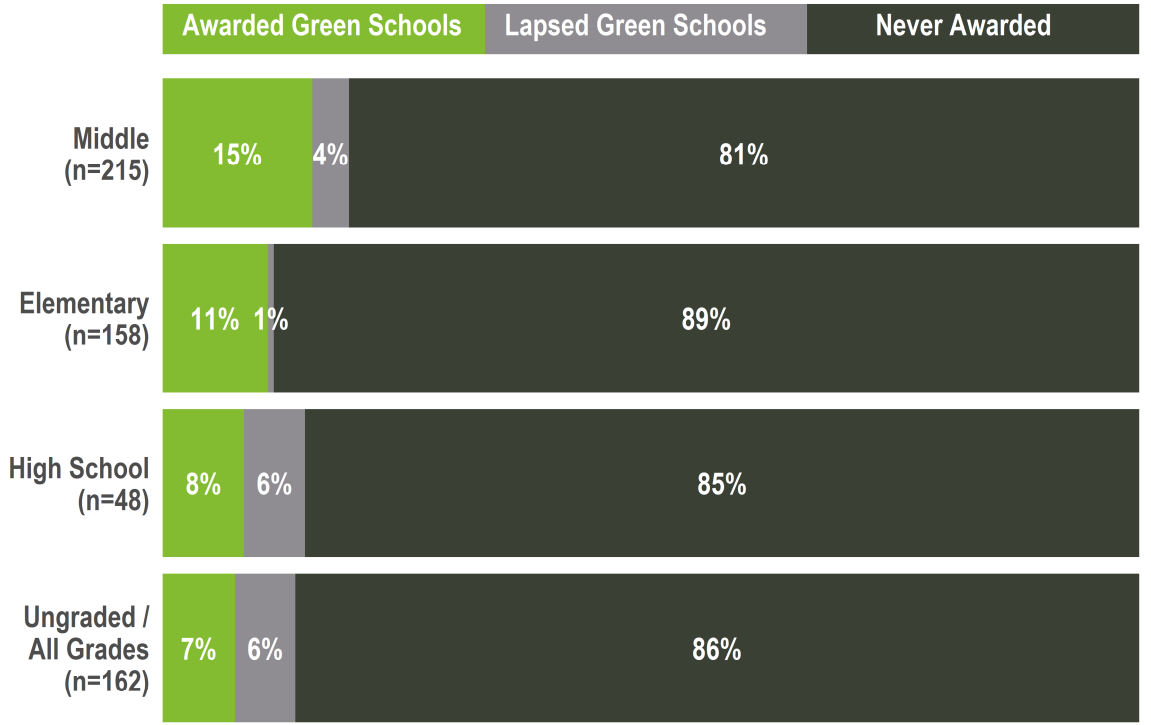
**Within private schools, the MDGS program is doing slightly better within the middle school grade band.**

Compared to the other grade bands, there are relatively more Green Schools among private schools that cover the middle school grades – at 15% of the schools at this grade band. At other grade levels, the program has awarded Green School status to around 8-10% of private schools.

Due to the lower overall rate of reach in private schools, any of these grade bands is an opportunity for program growth.

**Around 15% of private middle schools are MD Green Schools.**

Comparing the proportion of schools that are currently awarded, by each grade level of private schools




*Note: 'Middle School' contains overlapping grade bands of MS/HS and ES/MS*

# Private Schools: MDGS Reach by County

**Among private schools, county-wide rates of awarded Green Schools vary widely; percentages are heavily impacted by the small size of many counties, in terms of the number of private schools registered in public records.**

Arguably, the MDGS program has had the greatest traction among private schools in Anne Arundel County, where over one-quarter of the 49 private schools have been awarded. In Queen Anne's, Calvert, Talbot, and Kent Counties, only one private school is a Green School – but the small number of private schools in the county records means a high percentage of reach.

There are nine counties in which there are no *private* Maryland Green Schools.

The following page presents a heat map of the state showing these relative percentages geographically. While all counties have low percentages of private schools, Western Maryland and the Eastern Shore areas seem to be those least reached by the program – among private schools.

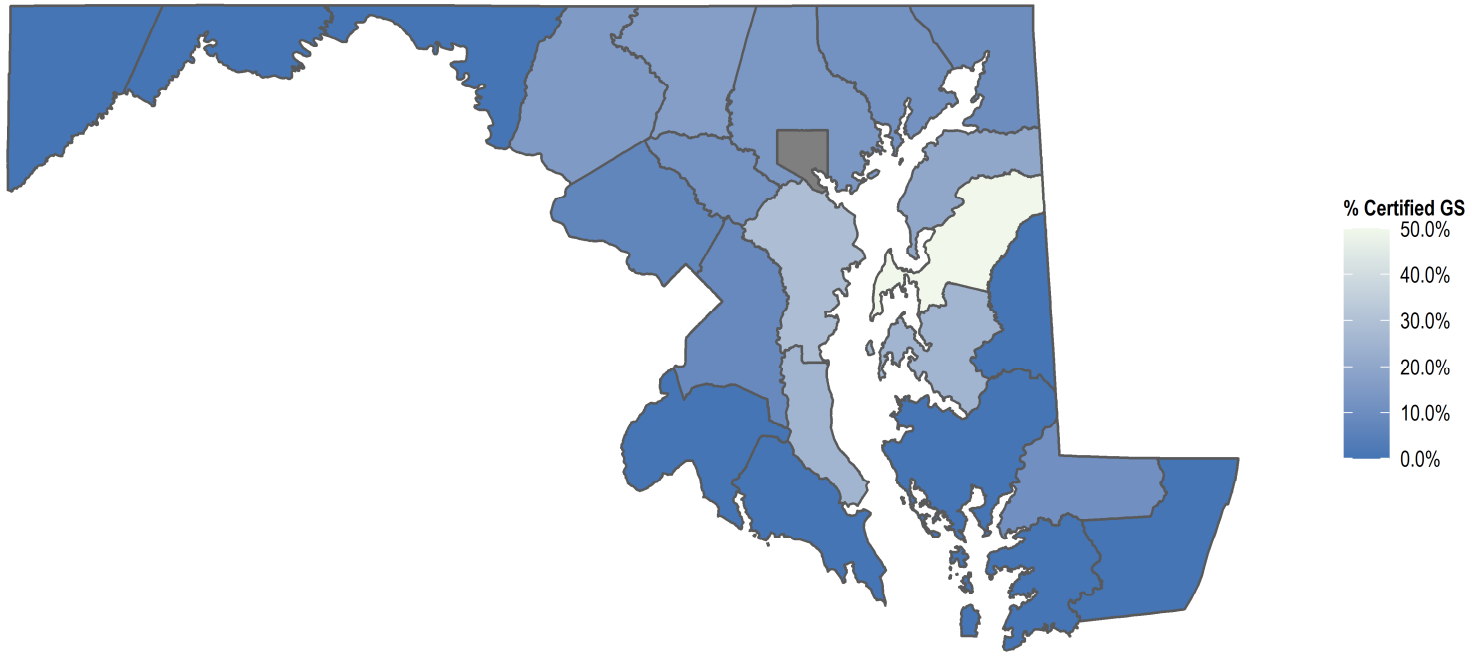
| County | Awarded | Lapsed | Never Awarded |
|---|---|---|---|
| Queen Anne's County (n=2) | 50% | 0% | 50% |
| Anne Arundel County (n=49) | 29% | 10% | 61% |
| Calvert County (n=4) | 25% | 25% | 50% |
| Talbot County (n=4) | 25% | 0% | 75% |
| Kent County (n=5) | 20% | 20% | 60% |
| Carroll County (n=12) | 17% | 0% | 83% |
| Frederick County (n=20) | 15% | 0% | 85% |
| Baltimore County (n=149) | 13% | 6% | 81% |
| Howard County (n=25) | 12% | 4% | 84% |
| Harford County (n=17) | 12% | 12% | 76% |
| Wicomico County (n=9) | 11% | 11% | 78% |
| Cecil County (n=10) | 10% | 0% | 90% |
| Prince George's County (n=73) | 8% | 0% | 92% |
| Montgomery County (n=132) | 7% | 2% | 92% |
| Allegany County (n=7) | 0% | 0% | 100% |
| Caroline County (n=2) | 0% | 0% | 100% |
| Charles County (n=13) | 0% | 0% | 100% |
| Dorchester County (n=2) | 0% | 0% | 100% |
| Garrett County (n=4) | 0% | 0% | 100% |
| Somerset County (n=1) | 0% | 0% | 100% |
| St. Mary's County (n=24) | 0% | 0% | 100% |
| Washington County (n=14) | 0% | 0% | 100% |
| Worcester County (n=3) | 0% | 0% | 100% |

# Private Schools: MDGS Reach by County

**Proportion of private schools, by county, certified as MD Green Schools**

This heat map depicts which counties have the highest percentage of their private schools certified (bright green), and which counties have the lowest percentage of private schools certified (bright blue).

In general, the regions with very little MDGS engagement are in the extreme ends of the state - Western Maryland and the Eastern Shore. However the number of registered private schools is very low in some counties.



# Private: Size of County and Award Rates

**This graphic reemphasizes that most counties have very few private schools at all, and regardless of size, relatively few have engaged with the MDGS program.**

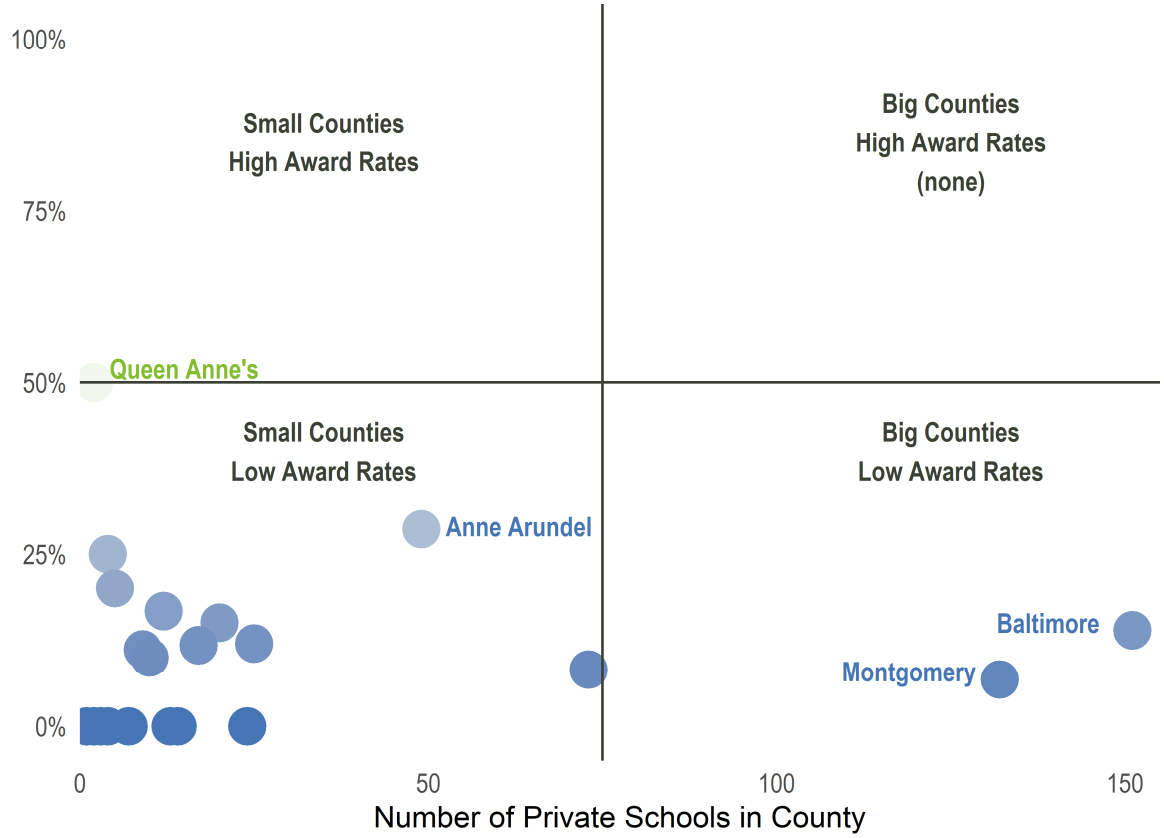
As with the table on page 28, Queen Anne's county stands out as the only county that has reached 50% of private schools awarded Green School status; however, this is due to the very small number of private schools in the publicly available dataset for the county (2 schools). However, it is notable that Queen Anne's County is also where the MDGS program has achieved 100% reach in public schools.

Taken together, this means that **all but one school – public or private – in Queen Anne's County is currently awarded and maintain status as a Maryland Green School.**

Anne Arundel County also stands out in this graphic, as it is the county with the fourth largest number of private schools, while also having achieved over 25% of its private schools awarded Green School status.

**Percentage of Private Green Schools by Total Number in County**

Scatter plot to explore any patterns between the number of private schools registered in a county and the percentage of those schools that have achieved Green School status



# Private: MDGS Reach in Urban/Rural Locations

**The MDGS program has had slightly greater success recruiting and awarding Green School status to private schools that are in suburban areas.**

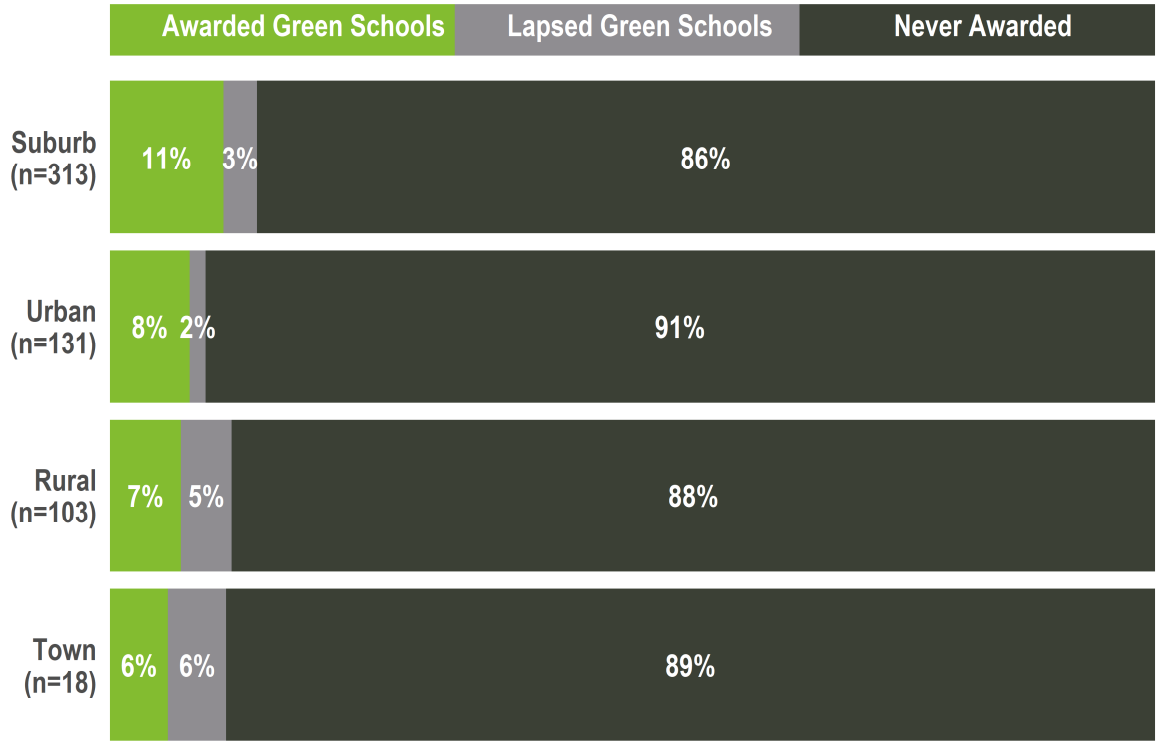
This figure compares the extent of the MDGS program's reach within private schools based on the census classification of their location (as rural, urban, suburban, or a town). While private schools show slightly greater success within suburban locations (where most of the private schools are located), the difference is not nearly as dramatic as the data from public schools.

Overall, the MDGS program's efforts with private schools have been fairly consistent regardless of the locale of the private schools.

*Note: These comparisons could only be performed on private schools with records in the state/national surveys of private schools, where these information are recorded. Due to missing data (private schools who have not submitted information to the state), percentages contain some error. This is true for the data on the next page as well.*

**MD Green Schools have had slightly better reach in suburban areas.**

Comparing the proportion of private schools that are currently awarded, by each locale type.



# Private: MDGS Reach by School Size

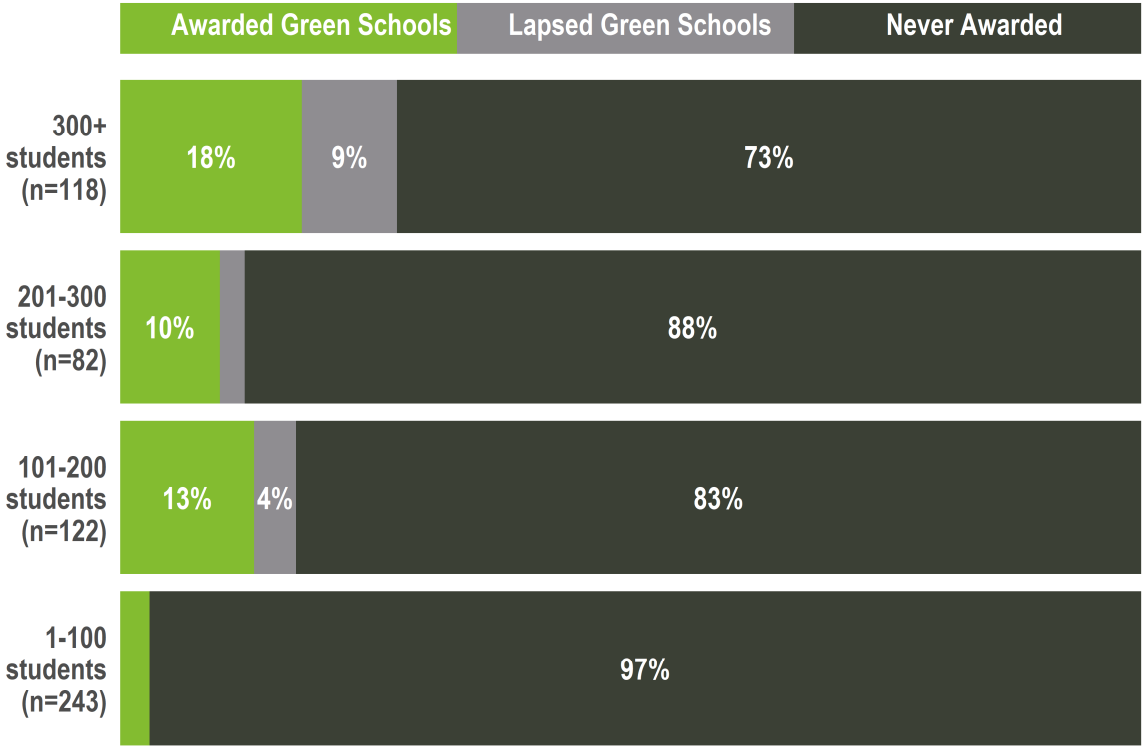
**Private schools are typically much smaller than public schools, in terms of student enrollment, but the pattern is even more pronounced that the MDGS program has had greater reach into larger private schools.**

Looking at the reach of the MD Green Schools by school size, we see that the program has had moderate success with private schools with enrollment of over 100 students. Among private schools, the average awarded Maryland Green School has almost 350 enrolled students.

In contrast, the MDGS program has had very little reach among the very small private schools (as reported in the NCES private school universe survey data). It is important to note that because of the nature of private schools and schooling, the data include extremely small private schools (i.e., as small as one student), which may be covered by home schooling or other arrangements. These very small private schooling venues may not be realistic targets for the MDGS.

**MD Green Schools have better reached larger private schools.**

Comparing the proportion of private schools that are currently awarded, by the school size (as defined by enrollment).



# Private: MDGS Reach by Student Race/Ethnicity

**Across private schools, the MDGS program has generally had greater success among schools where fewer than half of the enrolled students are identified as students of color.**

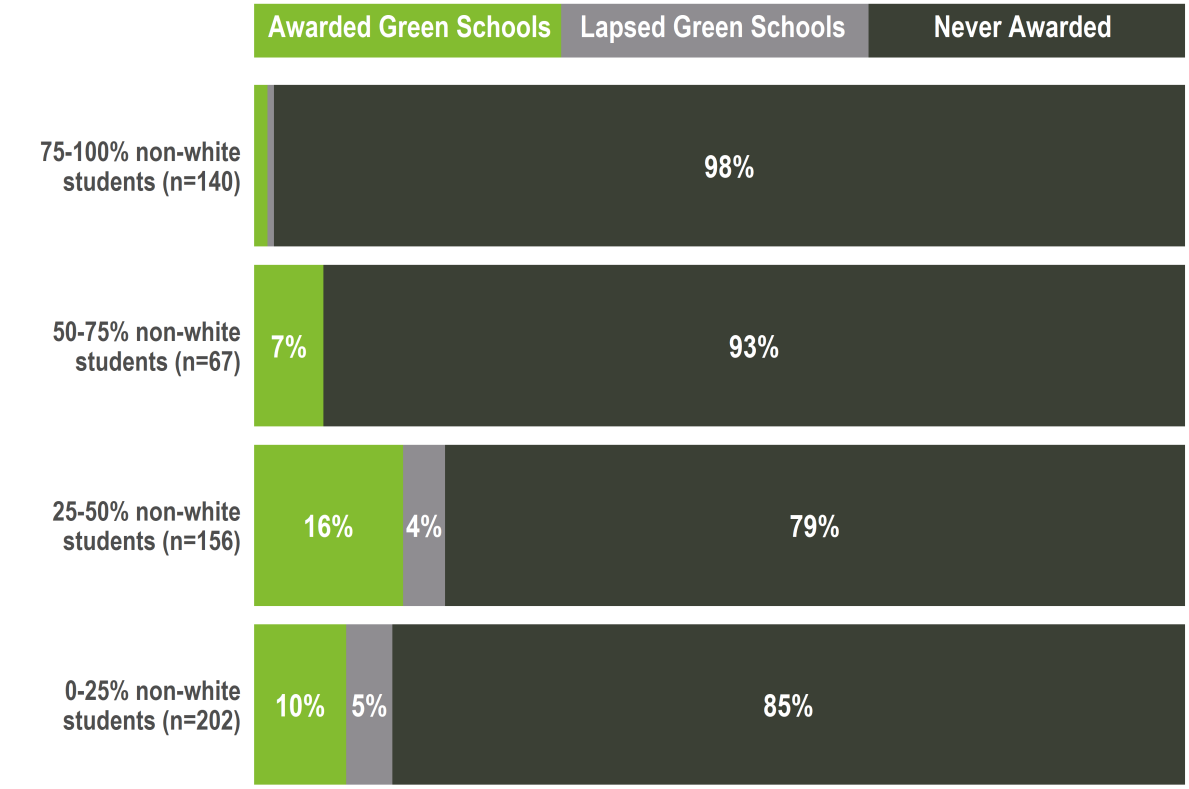
Unlike public schools, available data about private schools does not include socio-economic indicators, such as Title I and FARM eligibility. The primary measure of community diversity within private schools' data is race/ethnicity of enrolled students.

Overall, the MDGS program has had relatively greater success among private schools where one-quarter to one-half of enrolled students are students of color; 16% of those private schools are Green Schools. In contrast, very few private schools where students of color are the vast majority of enrollment have become Green Schools.

The number of private schools overall is small, so these numbers should be interpreted with caution; but it may indicate an opportunity to serve schools with more racially diverse student populations.

**Reach of MD Green Schools in private schools, by student race/ethnicity**

Comparing proportions of private schools that are currently Awarded, based on the percentage of students who are identified as a race/ethnicity other than white.



# Results

**Collective Student & Environmental Impact 2020-21**

# Number of Students Served within MDGS

**Nearly 430,000 students are currently attending Maryland Green Schools.**

When we aggregate the total student enrollment numbers across all currently awarded Maryland Green Schools (including those in their extension periods), the extent of the potential collective impact of the program on students is clear.

Another 100,000 students attend schools that were previously Green Schools, but have not maintained their status.

## Awarded Maryland Green Schools serve nearly 430,000 students

This includes awarded, sustainable, and those in their extension period.
Another 100,000+ students attend schools that were previous Green Schools, but that has lapsed.

# Green Practices in 2020-21

**In the 2020-21 applications, nearly every Green School is making some effort to recycle or reduce waste. Reducing energy consumption and providing healthy school activities were also widespread practices.**

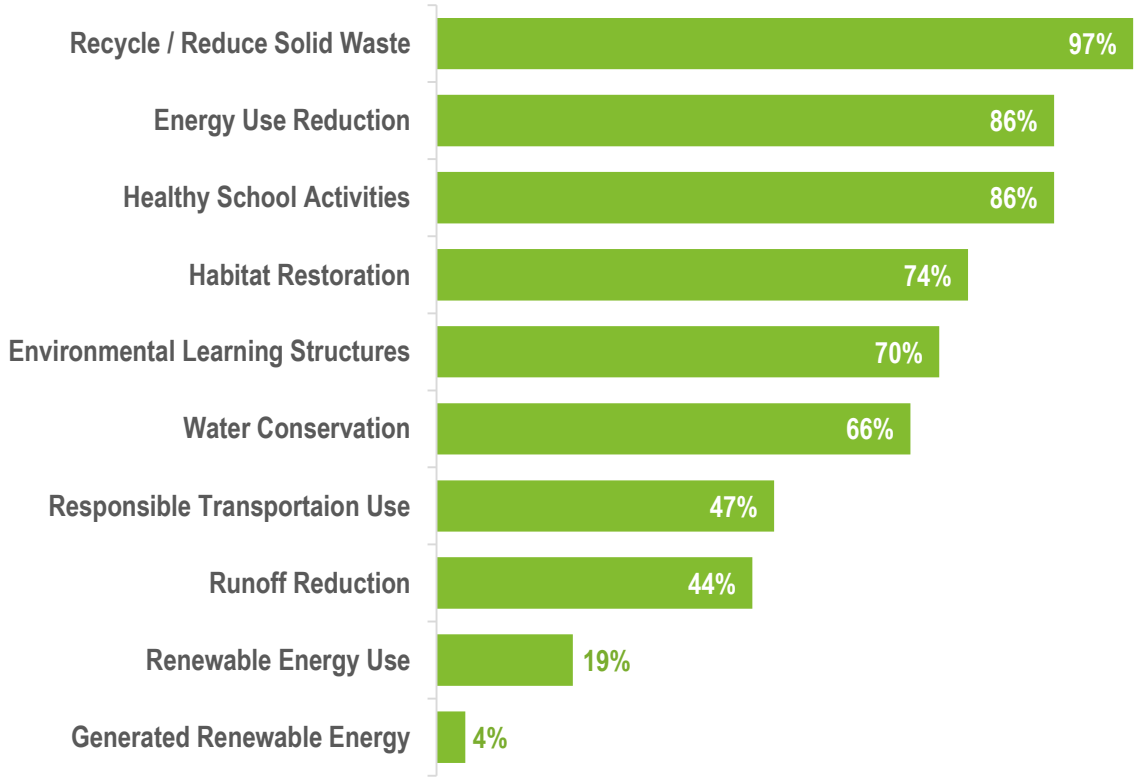
A majority of schools who applied for Green School awards this year (between 65 and 75%) reported engaging in habitat restoration activities, developing environmental learning structures, and water conservation practices.

Just under half of schools reporting data this year reported practices of responsible transportation use or runoff reduction. These may represent areas of potential growth for future years. Renewable energy use, and especially generating renewable energy, were the least implemented green practices.

The high-frequency green actions stand out as items that students can have a strong role in implementing and even leading. In contrast, the lowest frequency green actions on this list (renewable energy and runoff reduction) are actions that would require district-level action or authority.

**Self-Reported Rates of Green Practices Across Maryland Green Schools in 2020-21**

These are the rates of schools answering 'yes' to a yes or no question about whether they have implemented each of the following green practices. (n=70)



# Specific Practices: Recycling & Reducing Waste

**Over half of all Maryland green schools reported recycling some amount of ink cartridges over the application period. Over a third reported composting.**

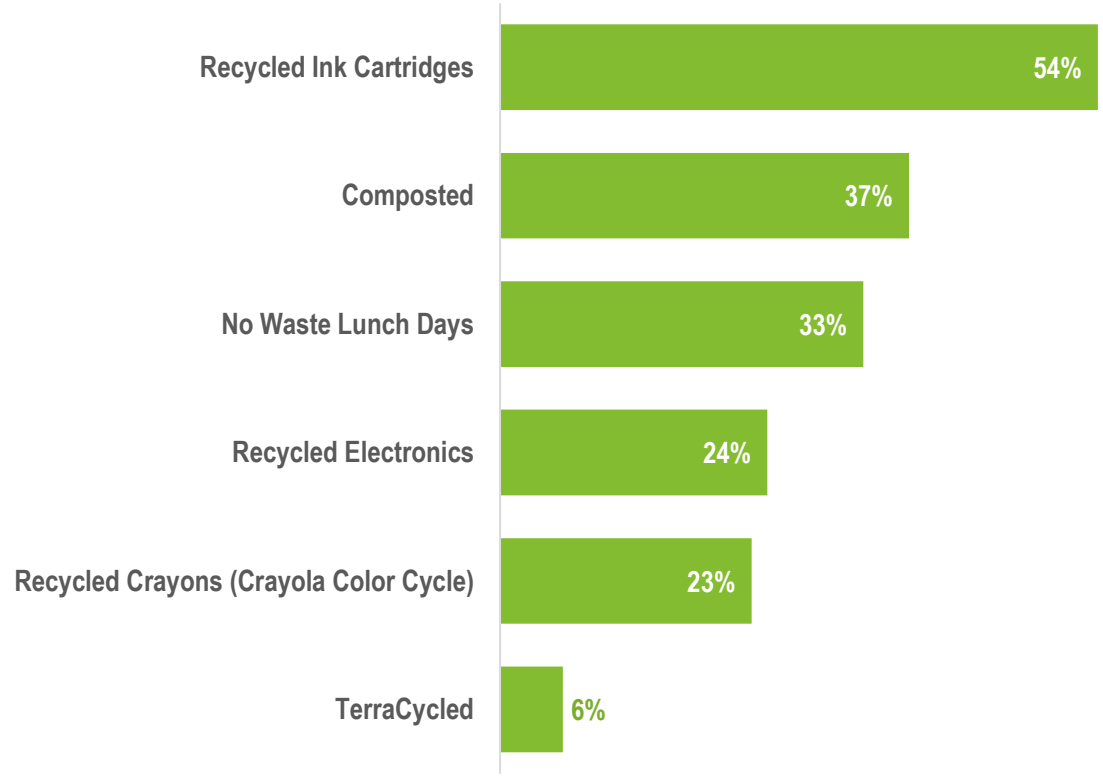
Drum composting was the most common form of composting (11 schools), followed by roughly equal use between vermiculture, open frame composting, and sending waste materials to a composting facility (6-7 schools each).

A third of schools reported some number of no-waste lunch days, totaling 331 across all schools. Nearly a quarter of schools reported recycling electronics or recycling crayons through the Crayola Color Cycle program. This totaled 1,280 recycled electronics and 519 pounds of recycled crayons.

Four schools reported TerraCycling, for a total of 620 pounds across all schools.

**Self-Reported Rates of Recycling and Waste Reduction Practices Across MD Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)



# Specific Practices: Energy Conservation

**In the area of conserving energy, schools most often reported that they had used blinds for temperature and light control – 80% of schools reported using this strategy.**

Half or more of schools reported using daylight to light rooms and installing energy-efficient lightbulbs as ways to conserve energy. In the self-reported data, this resulted in the use of 13,432 efficient lightbulbs being used across all schools.

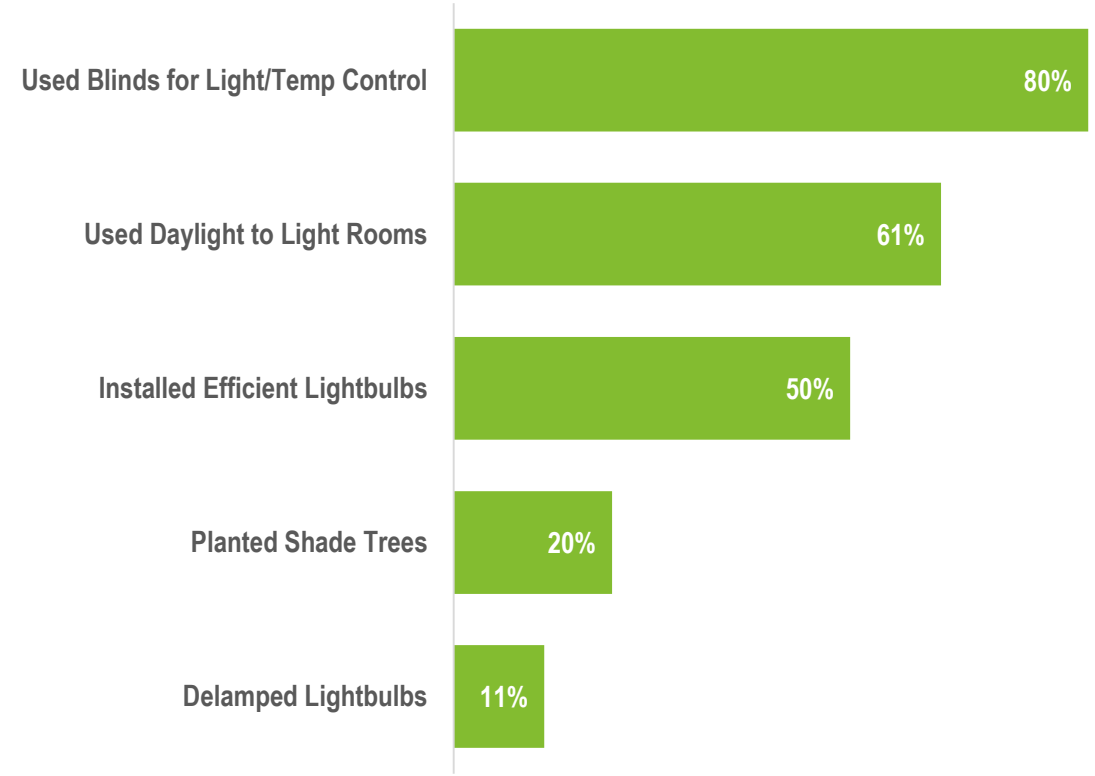
Less common energy conservation strategies included 1 in 5 schools that reported planting shade trees. This strategy resulted in 199 trees being planted for the purposes of energy conservation by these schools

Only 1 in 10 schools reported de-lamping lightbulbs in overly lit areas. This was the least reported energy conservation strategy.

Again, we see the pattern of more frequent use of actions that are student- and teacher-implemented, rather than at a district, building, or administrative level.

**Self-Reported Rates of Energy Conservation Practices Across MD Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)




Collective Impact

# Specific Practices: Healthy School Activities

**Within the category of healthy school activities, over 70% of schools reported using plants to improve indoor air quality and hosting healthy events, such as runs and environmental festivals.**

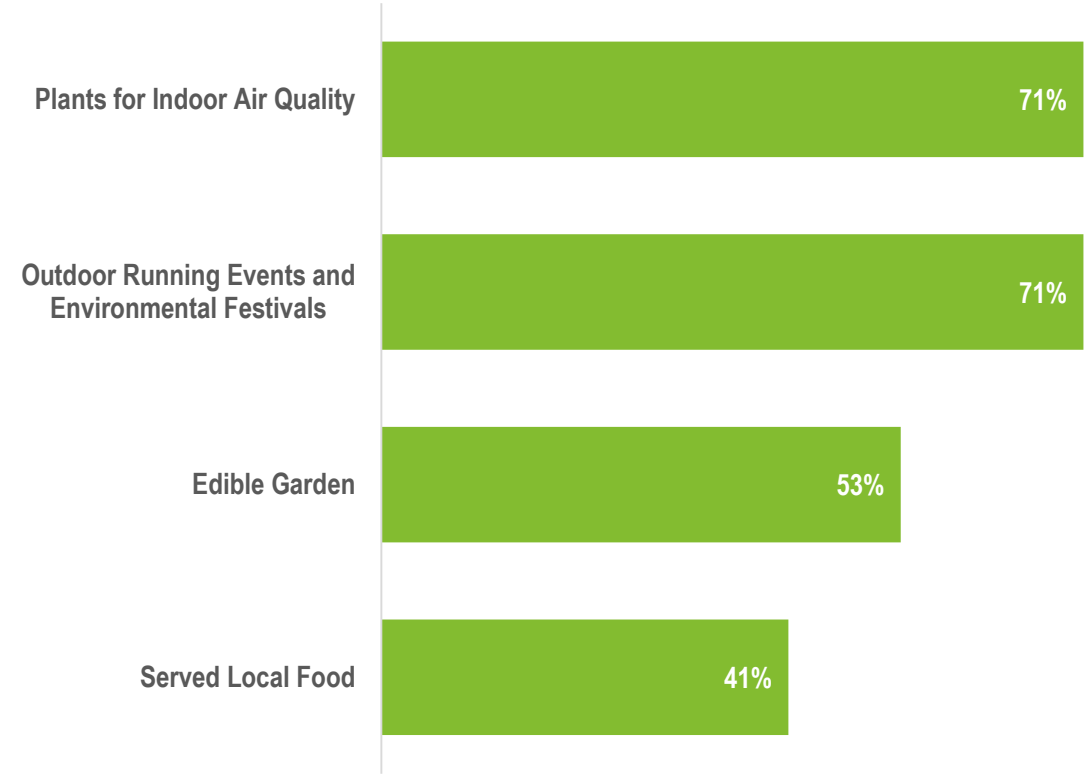
In these numbers, schools reported the use of 1,833 indoor plants across and hosting a total of 170 healthy school events per year.

Having an edible garden was another fairly common strategy, with over half of schools reporting they had an edible garden. The total area covered by these gardens was 5,895 sq. feet, according to self-reported totals.

Around 4 in 10 schools in 2021 reported serving local foods at least once per year.

**Self-Reported Rates of Healthy School Activities Across MD Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)



# Specific Practices: Habitat Restoration

**In the area of habitat restoration, 60% of all schools reported planting native shrubs as part of their sustainable school practices.**

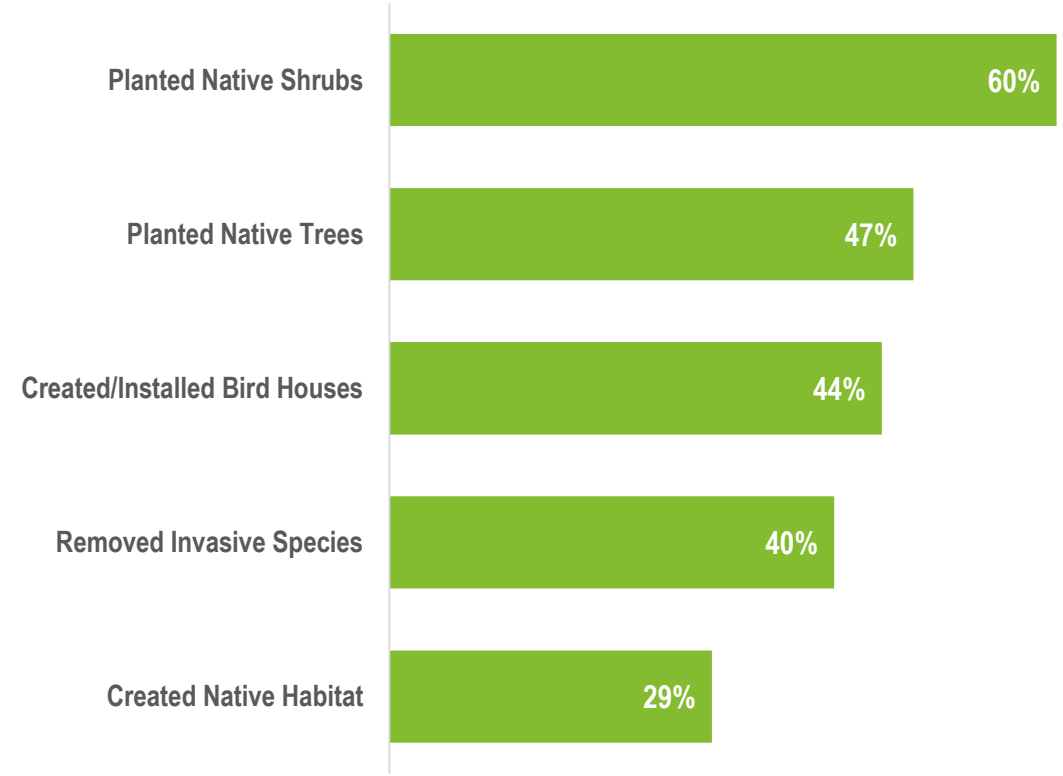
The next most common practices were planning native trees, installing bird houses, and removing invasive species, which were reported by between 40% and 50% of schools applying in 2020-21.

Those who reported removing invasive species estimated that a total of 43,098 sq. feet were cleared across all schools.

The least common habitat restoration activity was actually creating native habitat areas, which was reported by just under 30% of reporting schools.

**Self-Reported Rates of Habitat Restoration Across MD Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)



# Specific Practices: Environmental Learning

**8 out of 10 schools reported that they had used their school yard for learning at least once per year. This was, by far the most common way to engage with environmental learning structures, followed by use of outdoor classrooms.**

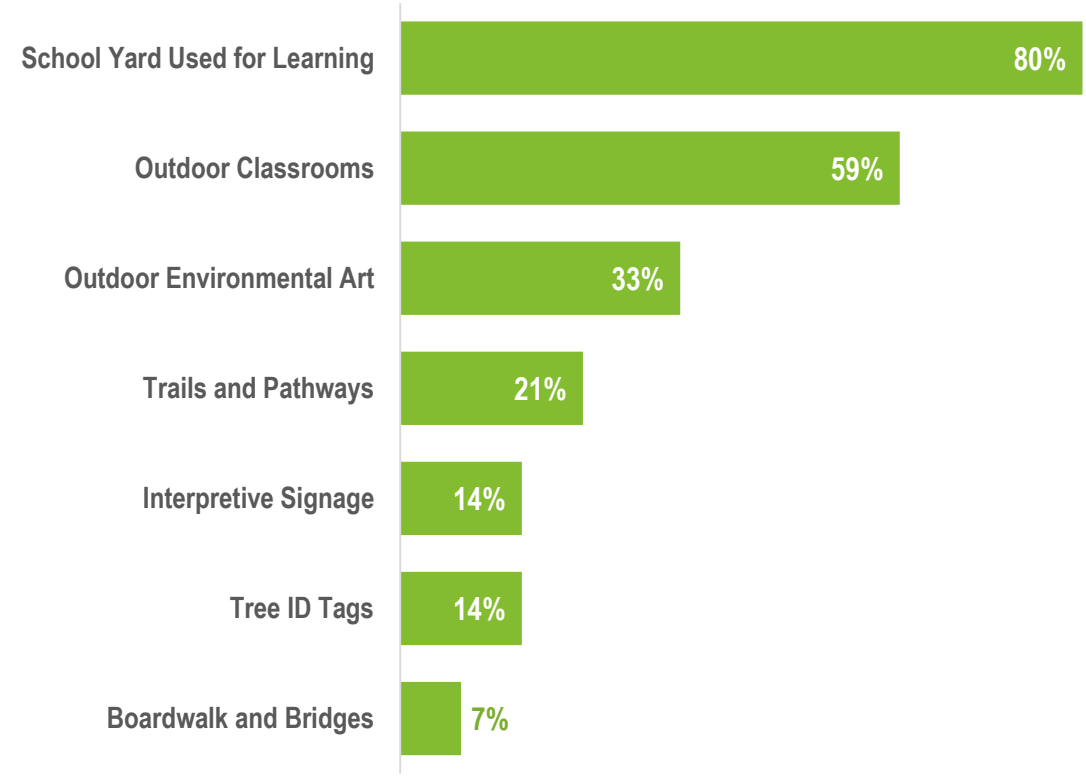
While this was not explored in the data, it is possible that this is a way that COVID-19 could potentially positively impact learning in the future – as many schools and educators thought about how the outdoors could better be used for learning (for its safety benefits).

The other environmental learning structures surveyed had lower use by schools. A third of schools had used outdoor environmental art, totaling 783 art pieces across all schools. One in five schools reported having trails and pathways, totaling a reported 40,263 feet of path across all schools.

This area is another with clear patterns that there is more frequent use of actions that are student- and teacher- implemented, rather than at a district, building, or administrative level.

**Self-Reported Rates of Environmental Learning Structures Across MD Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)



# Specific Practices: Water Conservation

**By far, collecting litter (to prevent it from getting in waterways) was the most common way that schools reduced water pollution, with almost three-quarters of reporting schools noting they had taken this action.**

Just over one-third of schools reported having created a rain garden or bioretention area to help with water runoff issues.

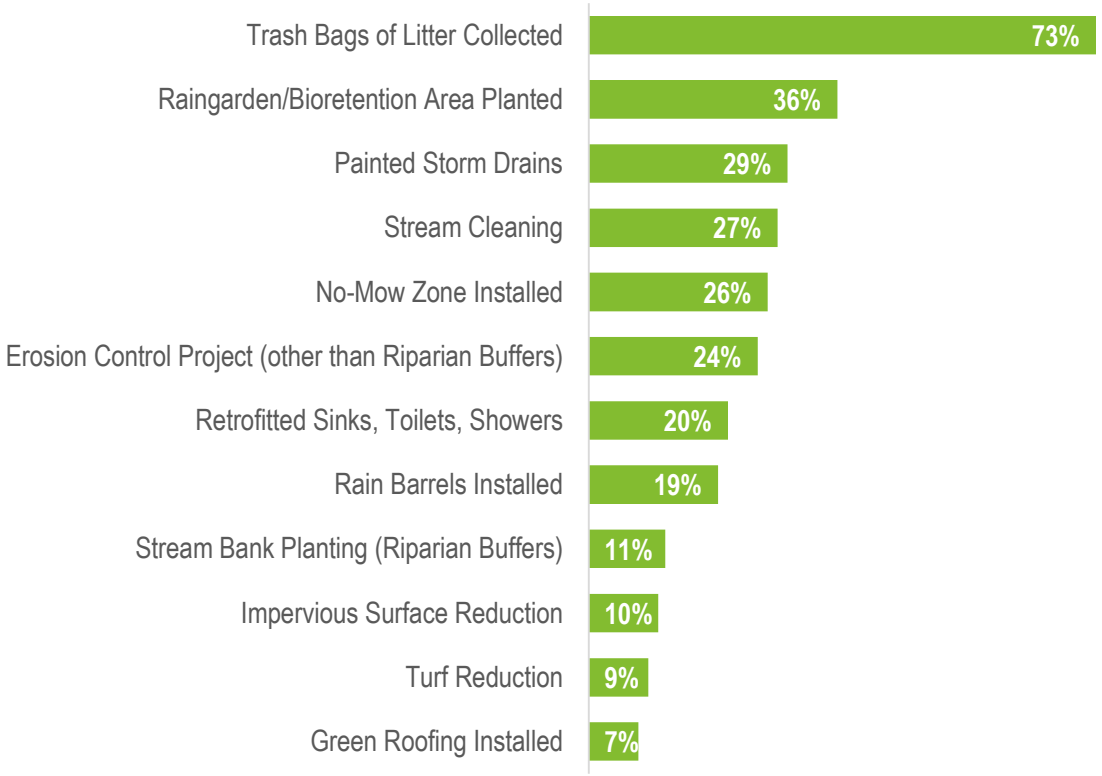
All other water protection actions were reported by fewer than one-third of schools, which included painting storm drains, stream cleaning, installing no mow zones, erosion control projects, retrofitting plumbing, and installing rain barrels.

In total, these schools reported a total of 333 pieces of retrofitted plumbing installed.

Infrequently tried strategies included larger changes, including planting riparian buffers, reducing impervious surfaces, turf reduction, and green roof installation. These likely require substantial investment and/or approval by more stakeholders or entities.

**Reported Rates of Water Conservation and Limiting Water Pollution Across Green Schools**

A school was counted in the percentages below if they entered any number above zero in a question quantifying that practice, indicating they had participated to some extent. (n=70)



# Summary: Reported Green Practices in 2020-21

| Total | Green Practice Measure Included in MDGS Survey | Total | Green Practice Measure Included in MDGS Survey |
|---|---|---|---|
| 723,365 | Lbs. of Recycled Materials Per Year | 23,970 | Feet of Streams Cleaned |
| 17,397 | Lbs. of Food Waste Reduced Per Year | 5,757 | Trash Bags of Litter Collected |
| 26,999 | Lbs. of Organic Waste Collected Per Year | 7,350,878 | Kilowatt-Hours of Energy Conserved |
| 170 | Outdoor Running Events and Environmental Festivals Held per Year | 2,940,500 | Kilowatt-Hours of Green Energy Generated |
| 16,370 | Sq. Feet of Native Habitat Restored | 217 | Birdhouses Created/Installed |
| 80 | Outdoor Classrooms | 1,596 | Native Plants and Shrubs Planted |
| 783 | Pieces of Outdoor Environmental Art | 43,098 | Sq. Feet of Invasive Plant Removal |
| 194,969 | Gallons of Water Conserved | 20 | No-Idling Zones |
| 181,359 | Sq. Feet of Stream Bank Planting and Erosion Control | 1,833 | Plants for Indoor Air Quality |
| 33,456 | Sq. Feet of Rain Garden / Bioretention Area Planted | 5,895 | Sq. Feet of Edible Gardens Installed |

*Note: Metrics come from schools' self-reported measures or estimates of total indicators included in the survey; reported at the time of application for award or re-award. For the purposes of this reporting, we do not verify or adjust the totals reported (using their numbers verbatim).*

# Range of Self-Reported Numbers in Practices

**There were dramatic ranges of environmental metrics reported by schools in 2020-21, indicating there may be limits to the reliability of self-reported numbers.**

The table shows the lowest and highest values provided in response to each of the quantified environmental metrics in the MDGS survey. The dramatic spans of estimates indicates that some schools may struggle to accurately measure, estimate, or understand questions when asked to report these numbers.

Estimating savings in kilowatt-hours (kWh), had a dramatic range of estimates, suggesting (some) schools had difficulty reporting these measures. Similarly, projects that get reported in sq. feet also had extremely wide reported ranges. It is unclear whether this is due to the unit of measurement, or if schools are misunderstanding the unit (i.e., reporting '1' erosion control project versus '150 feet' of erosion control on a river).

Some schools that participated in a practice may also have entered '1' to signify that they could not quantify their activities.

| Low Est. | High Est. | Green Practice |
|---|---|---|
| 18 | 7,200,000 | Energy Saved Per Year (Kilowatt-Hours) |
| 1 | 130,000 | Erosion Control Projects (Sq. Ft.) |
| 80 | 110,000 | Lbs. of Materials Recycled per Year |
| 50 | 90,000 | Gallons of Water Saved |
| 5 | 75,000 | Turf Reduction (Sq. Ft.) |
| 40 | 25,146 | Green Roof (Sq. Ft.) |
| 1 | 12,000 | Trails and Pathways (Sq. Ft.) |
| 3 | 10,940 | Lbs. of Organic Waste Collected per Year |
| 1 | 7,163 | No-Mow Zone (Sq. Ft.) |
| 50 | 5,300 | Stream Cleaning (Sq. Ft.) |
| 1 | 5,000 | Created Native Habitat (Sq. Ft.) |
| 1 | 1,500 | Trash Bags of Litter Collected |

# Conclusions

**Implications of Results**

# Conclusions: Making Progress toward Goal

**MAEOE is in a strong position toward its goal of 50% of all schools being Green Schools, having increased to 33% of schools in 2021.**

Overall, the program has 663 Green Schools, which represent roughly 430,000 students in the state of Maryland. There was no loss of Green Schools in 2021, due to extended grace periods offered in response to COVID-19. The 127 schools in their extension periods should be carefully supported post-COVID to minimize the impact of this difficult year on program progress.

The difference in award rates between public and private school populations was dramatic. The MDGS program is much closer to its goal with public schools – with 42% of public schools awarded. Far fewer private schools are awarded by the program (only 11%). Private schools are a challenging sector, as they are less closely monitored, regulated, and they include extremely small private educational entities.

**MDGS would be well-served to recalibrate and focus the population of schools it considers reasonably part of its target for the 50% goal.** This may be focusing just on public schools and/or only including private schools over a certain threshold of enrollment.

**Among public schools, MDGS has had greater success with schools in rural or suburban locations, as well as those with indicators of higher community socioeconomic status.**

The MDGS program has maintained fairly even reach into public schools by grade level and by school size (for public schools over 250 students, which is most of them). There were no substantial biases in the award rates on those school characteristics.

However, there was a much greater success rate in rural and suburban schools, as well as within schools that had indicators of higher socio-economic status (Title I and student FARM eligibility). Schools in urban and economically disadvantaged schools were less likely to be in the group of Maryland Green Schools at the present time.

It may be worth further investigation to understand the perception of these schools about the MDGS program and how it aligns with the pressures and priorities for urban schools and those in economically disadvantaged communities. This seems like an area of great potential for the MDGS program to highlight how it can support these communities.

**While 8 counties have already reached the 50% mark of Green Schools, there seems to be more of a gap in awards in the southern counties of the Eastern Shore.**

Queen Anne's and Calvert Counties have shown outstanding results at achieving public schools awarded and maintaining status as Maryland Green Schools. In contrast, Somerset and Dorchester counties are gaps in the current MDGS map, with no public schools awarded as Green Schools in these data. Both counties are in the southern part of the Eastern Shore area, which points to another potential area of investigation to explore why the program may have less resonance with the schools in this region.

Among the larger counties in the state, Prince George's County stood out as a success story. Even with its large size (in terms of number of schools), the majority of those schools have been awarded Green School status. Baltimore City, in contrast, is a large district where the program has not gained substantial traction. It is quite possible that there are parallels in the data about the program's lower connection with urban and underserved communities.

# Conclusions: Areas for Strategic Growth

**Among the much smaller group of private schools, MDGS has fewer clear patterns in which types of schools have achieved Green School status than in public schools.**

With relatively fewer awarded private schools, there were also less dramatic patterns related to which types of private schools were awarded, versus those that are not. While the program seemed to be doing slightly better in suburban areas, there was not a dramatic drop-off in the rates of Green Schools for private schools in urban areas (as seen with public school data).

There were, however, generally higher rates of awards among schools with higher proportions of white students in enrollment numbers. (Private schools do not have the same indicators of socioeconomic status as public schools; data on race was the available metric.)

Among private schools, the program does much better with schools with higher enrollment (e.g., over 100 students). Because of the variation in private schools, it may be worth setting a threshold of enrollment that makes a school a viable candidate for the MDGS program, which could eliminate the extremely small schools from the benchmarking analysis in the future.

**Looking by county, most counties are well under the 50% threshold among their private schools, which is unsurprising given the overall lack of private schools awarded.**

Queen Anne's County again has a high percentage of private schools awarded as Green Schools; but that is 1 of 2 private schools in the county (according to NCES survey data). More notable is Anne Arundel County, which has 49 private schools reported in the NCES data, and 29% of these are Maryland Green Schools.

Baltimore and Montgomery Counties are potential opportunity areas for expanding the MDGS program in private schools, as both counties have larger numbers of registered private schools, but have had relatively low levels of awards to those schools.

However, it is again worth emphasizing the much smaller population of private schools – particularly on a county-by-county basis – which may constrain the usefulness of this analysis for considering the strategic direction of the MDGS program. Overall, the degree to which private schools are an emphasis of the program's 50% target should be considered carefully.

**Awarded Maryland Green Schools show great potential for measurable environmental impact; however, they may need more support to reliably report metrics for aggregation.**

From self-reported environmental metrics, we see substantial potential of the environmental impact of the program – from kilowatt-hours of energy saved to square feet of habitat restored to pounds of trash kept out of waterways or landfills. Recent research done in collaboration with MDGS quantified the impact of these metrics (Haines & McDonough, 2020).

Looking at individual responses in aggregates, however, we see evidence that some schools may struggle to accurately estimate data for these environmental metrics. The wide ranges of responses suggest likely under-estimations (e.g., indicating 1 square-foot of no-mow zones, when they may have meant 1 zone of an unknown square footage), as well as some over-estimations (e.g., 7 million kWh). There may also be confusion about the time scale for reporting metrics – whether it is a 4-year total or an annualized number (the average over the application period). More clarity, specificity, and tips about how to record and find these data would improve their reliability.

# MDGS Progress toward Statewide Goals: 2020-21

## contact

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