Review of Geographic Cost Adjustment Component in the Essential Programs and Services Model

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## Prologue

This review was prepared under contract to the Maine Department of Education as part of MEPRI's routine annual review of EPS components. During the spring 2019 first regular session of Maine's $129^{\text {th }}$ legislature, Resolve Chapter 70 "Resolve, Directing the Department of Education To Direct a Study of the Regional Adjustment for School Administrative Units" (L.D. 309) was passed to require that this review include certain key elements.

Sec. 1. Study of the regional adjustment for school administrative units.
Resolved: That the Department of Education shall direct the Maine Education Policy Research Institute, in the institute's review of the Essential Programs and Services Funding Act, to study and report to the department on the regional adjustment for school administrative units under the Essential Programs and Services Funding Act. The study must include an update of the data that is used to calculate the regional adjustment to reflect the current economic environment and must include an analysis of how any adjustment to, or removal of, the regional adjustment in the funding formula would affect all school administrative units. The department shall submit the report to the Joint Standing Committee on Education and Cultural Affairs no later than January 15, 2020. The Joint Standing Committee on Education and Cultural Affairs may submit a bill to the Second Regular Session of the 129th Legislature.

The "update of the data that is used to calculate the regional adjustment to reflect the current economic environment" using the existing labor market regions is described in Tables 1 and 2 (pages 3 and 5). Analysis using revised teacher labor market areas is included in Tables 3 and 5. The "analysis of how any adjustment to, or removal of, the regional adjustment in the funding formula would affect all school administrative units" for several different scenarios, including removal of the adjustment, is included in Appendix C (beginning on page 28).

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The findings of this component review are presented in two parts. Part One provides two sets of updated calculations for the regional adjustment. In the first set, only the salary data are updated, and the same geographic areas are used as in the current EPS Regional Adjustment. The other set of updated calculations provides an update to the geographic areas as well as the salary data.

Part Two examines policy options in light of the updated calculations in Part One. Cost estimates and analysis are provided for several policy options to aid in evaluation and decision making regarding the EPS Regional Adjustment.

## Findings Part One: Updating the Regional Adjustment Calculation with Old LMAs and New LMAs

## Method: Updating the Regional Adjustment Calculation (Old LMAs)

The regional adjustment for each LMA or LMA group was calculated initially and during each update based on the salaries of full time teachers in all of the SAUs within the LMA groups. However, some LMAs have teachers with more experience and education than others, meaning they will be at different points on the local salary scale. The regional adjustment takes this into account by adjusting each LMA average salary to what it would be if the LMA had the same experience and education profile as the state as a whole. The adjusted average salary for each LMA or LMA group was calculated using a statistical method called regression analysis, based on the salaries of teachers within the LMA at different levels of experience and education.

## Results: Updating the Regional Adjustment Calculation (Old LMAs)

The results of recalculating a regional adjustment for each LMA with 2016-17 teacher data are shown in Table 1. For each LMA or LMA group the average annual teacher salary is shown as a dollar amount as well as indexed to the state, where 1.00 represents the statewide average annual teacher salary. For example, the 1.19 index for the Kittery-York LMA means that the average teacher salary
there was $19 \%$ higher than the statewide average teacher salary. To the right of the indexed salary is the average salary adjusted for education and experience, which was the result of the regression analysis described above. If the adjusted average salary is lower than the unadjusted average salary—such as in the Kittery-York LMA, $\$ 61,026$ compared to $\$ 62,395$-this means that the teachers in that LMA have on average fewer years of experience or a lower average educational attainment than in the state as a whole. The regional adjustment in the rightmost column is the adjusted average salary indexed to the state, where a 1.00 represents the state average teacher salary $\$ 52,572$. The 1.16 in the regional adjustment column for the Kittery-York LMA means that, after adjusting for the experience and education levels in the LMA, averages salaries are $16 \%$ higher than the state average.

The calculated regional adjustments range from a low of 0.80 in the Lincoln-Howland LMA based on a $\$ 41,973$ adjusted average salary to 1.16 in the Kittery-York LMA based on a $\$ 61,026$ adjusted salary. This is a smaller range than the unadjusted average salaries, which range from a 0.76 index in the Machias-Eastport LMA based on a $\$ 40,001$ average salary to 1.19 in the Kittery-York LMA at $\$ 62,395$.

Note that the EPS cost allocation model also accounts for the teacher experience and education level within each individual SAU. This item is not included within the regional adjustment component of EPS but rather in the teacher salary matrix component. The combination of the two components is designed to yield a sufficient allocation to pay for enough school staff, given local labor costs.
(See Appendix A for more details on the calculation of the EPS Regional Adjustment.)

Table 1. Regional Adjustment Calculation by LMA Group (2016-17 Teacher Salary Data)

| Labor Market Area (LMA) |  | Average <br> Teacher <br> Salary | Indexed to State | Average Salary Adjusted for Education and Experience | Regional Adjustment |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Kittery - York LMA | \$ 62,395 | 1.19 | \$ 61,026 | 1.16 |
| 2 | Sanford LMA | 50,639 | 0.96 | 51,971 | 0.99 |
| 3 | Biddeford LMA | 57,719 | 1.10 | 56,997 | 1.08 |
| 4 | Greater Portland LMA | 59,047 | 1.12 | 57,729 | 1.10 |
| 5 | Bath - Brunswick LMA | 57,503 | 1.09 | 53,942 | 1.03 |
| 6 | Boothbay Harbor LMA | 57,740 | 1.10 | 58,564 | 1.11 |
| 7/10 | Sebago Lake LMA <br> Norway - Paris LMA | 47,219 | 0.90 | 47,532 | 0.90 |
| $\begin{gathered} 8 \\ 9 \\ 11 \end{gathered}$ | Lewiston - Auburn LMA | 48,163 | 0.92 | 50,772 | 0.97 |
|  | Rockland LMA | 52,845 | 1.01 | 54,441 | 1.04 |
|  | Stonington LMA | 48,928 | 0.93 | 48,112 | 0.92 |
| $\begin{aligned} & \hline 12 \\ & 13 \\ & 14 \\ & 15 \\ & 16 \end{aligned}$ | Augusta LMA | 48,531 | 0.92 | 48,503 | 0.92 |
|  | Waterville LMA | 50,284 | 0.96 | 48,621 | 0.92 |
|  | Belfast LMA | 51,069 | 0.97 | 50,994 | 0.97 |
|  | Bucksport LMA | 47,427 | 0.90 | 45,759 | 0.87 |
|  | Jonesport - Milbridge LMA | 42,208 | 0.80 | 43,000 | 0.82 |
| $\begin{aligned} & \hline 17 \\ & 18 \\ & 19 \\ & 20 \\ & 21 \\ & \hline \end{aligned}$ | Bangor LMA | 55,024 | 1.05 | 53,792 | 1.02 |
|  | Machias - Eastport LMA | 40,001 | 0.76 | 43,920 | 0.84 |
|  | Dexter - Pittsfield LMA | 48,024 | 0.91 | 50,030 | 0.95 |
|  | Ellsworth - Bar Harbor LMA | 47,549 | 0.90 | 48,216 | 0.92 |
|  | Outer Bangor LMA | 44,285 | 0.84 | 45,867 | 0.87 |
| $\begin{aligned} & 22 \\ & 23 \\ & 24 \\ & 25 \end{aligned}$ | Rumford LMA | 50,252 | 0.96 | 49,572 | 0.94 |
|  | Lincoln - Howland LMA | 40,901 | 0.78 | 41,973 | 0.80 |
|  | Farmington LMA | 49,422 | 0.94 | 48,395 | 0.92 |
|  | Calais LMA | 47,209 | 0.90 | 47,450 | 0.90 |
| 26/27/28 | Patten - Island Falls LMA Millinocket - East Millinocket LMA Houlton LMA | 44,382 | 0.84 | 45,396 | 0.86 |
| 29 | Skowhegan LMA | 51,942 | 0.99 | 50,656 | 0.96 |
| 30/31 | Greenville LMA <br> Dover - Foxcroft LMA | 44,523 | 0.85 | 48,126 | 0.92 |
| 32 | Presque Isle - Caribou LMA | 47,794 | 0.91 | 47,577 | 0.90 |
| 33/34/35 | Van Buren LMA <br> Fort Kent LMA <br> Madawaska LMA | 48,721 | 0.93 | 49,785 | 0.95 |
|  | Lowest | \$ 40,001 | 0.76 | \$ 41,973 | 0.80 |
|  | Highest | \$ 62,395 | 1.19 | \$ 61,026 | 1.16 |
|  | Maine | \$ 52,572 | 1.00 | \$ 52,572 | 1.00 |

## Comparison to Current EPS Regional Adjustment and to Prior Reviews

The EPS regional adjustment was initially calculated using 2004-05 data. The results of the original calculation are still used in computing SAU EPS allocations on the ED 279 reports which determine state subsidy. Since the initial calculation, the regional adjustment has been recalculated four times with newer data during periodic reviews, including the current review. The data for the recalculations were from 2006-07, 2008-09, 2013-14, and 2016-17. The results are shown in Table 2. Each time, the range of the adjustments has been greater than the 2004-05 data. The largest range, which was in the newest data, was a difference of 0.36 from a low of 0.80 to a high of 1.16 . The difference reflected in the 2004-05 data was only 0.25 , from a low a 0.84 to a high of 1.09 .

The greatest increase in salaries relative to the state average from 2004-05 to 2016-17 was a +0.10 increase in the Kittery-York LMA where adjusted salaries went from 1.06 times the state average to 1.16 times the state average. The Kittery-York LMA went from being the third highest adjusted salaries in 2004-05 to the highest in 2017-18. The greatest decrease in salaries relative to the state average from 2004-05 to 2016-17 was a 0.07 decrease in both the Bucksport LMA where adjusted salaries went from 0.94 times the state average down to 0.87 times the state average and the Skowhegan LMA where adjusted salaries went from 1.03 times the state average down to 0.96 times the state average.

The changes in the calculated regional adjustments for each review reflected actual changes in teacher salaries in different areas of the state. As a result of these calculations we can conclude that the differences in teacher salaries across different areas of Maine have indeed become larger since the date of the adoption of the EPS funding model. The results do not show that the changes were necessarily because of the EPS funding model. Keeping the prior funding formula may have also resulted in increased salary disparity. The EPS model has not been updated to reflect the newer data and the larger differences in actual salaries.

Table 2. Calculated Regional Adjustment Change By Labor Market Areas 2004-05 to 2016-17

|  | Labor Market Area (LMA) | Regional Adjustment Calculations |  |  |  |  | $\begin{aligned} & \text { Change } \\ & \text { 2004-05 } \\ & \text { 2016-17 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} \text { 2004-05 } \\ \text { Data } \end{gathered}$ | 2006-07 <br> Data | $\begin{gathered} \text { 2008-09 } \\ \text { Data } \end{gathered}$ | 2013-14 <br> Data | $\begin{gathered} \text { 2016-17 } \\ \text { Data } \end{gathered}$ |  |
| 1 | Kittery - York LMA | 1.06 | 1.07 | 1.06 | 1.13 | 1.16 | +. 10 |
| 2 | Sanford LMA | 1.03 | 1.04 | 1.02 | 1.00 | 0.99 | -. 04 |
| 3 | Biddeford LMA | 1.09 | 1.09 | 1.09 | 1.09 | 1.08 | -. 01 |
| 4 | Greater Portland LMA | 1.08 | 1.08 | 1.09 | 1.10 | 1.10 | +. 02 |
| 5 | Bath - Brunswick LMA | 1.02 | 1.04 | 1.03 | 1.05 | 1.03 | +. 01 |
| 6 | Boothbay Harbor LMA | 1.03 | 1.02 | 1.05 | 1.06 | 1.11 | +. 08 |
| $\begin{aligned} & 7 / \\ & 10 \end{aligned}$ | Sebago Lake LMA <br> Norway - Paris LMA | 0.94 | 0.94 | 0.93 | 0.91 | 0.90 | -. 04 |
| 8 | Lewiston - Auburn LMA | 0.98 | 0.97 | 0.96 | 0.95 | 0.97 | -. 01 |
| 9 | Rockland LMA | 1.00 | 1.01 | 1.00 | 0.97 | 1.04 | +. 04 |
| 11 | Stonington LMA | 0.95 | 0.98 | 0.94 | 0.94 | 0.92 | -. 03 |
| 12 | Augusta LMA | 0.95 | 0.96 | 0.94 | 0.93 | 0.92 | -. 03 |
| 13 | Waterville LMA | 0.97 | 0.97 | 0.96 | 0.94 | 0.92 | -. 05 |
| 14 | Belfast LMA | 1.01 | 1.01 | 0.99 | 0.98 | 0.97 | -. 04 |
| 15 | Bucksport LMA | 0.94 | 0.92 | 0.90 | 0.88 | 0.87 | -. 07 |
| 16 | Jonesport - Milbridge LMA | 0.84 | 0.84 | 0.83 | 0.81 | 0.82 | -. 02 |
| 17 | Bangor LMA | 1.02 | 0.99 | 1.02 | 1.04 | 1.02 | +. 00 |
| 18 | Machias - Eastport LMA | 0.84 | 0.81 | 0.83 | 0.77 | 0.84 | -. 00 |
| 19 | Dexter - Pittsfield LMA | 0.94 | 0.96 | 0.96 | 0.96 | 0.95 | +. 01 |
| 20 | Ellsworth - Bar Harbor LMA | 0.93 | 0.93 | 0.91 | 0.89 | 0.92 | -. 01 |
| 21 | Outer Bangor LMA | 0.89 | 0.89 | 0.89 | 0.88 | 0.87 | -. 02 |
| 22 | Rumford LMA | 0.93 | 0.92 | 0.92 | 0.94 | 0.94 | +. 01 |
| 23 | Lincoln - Howland LMA | 0.86 | 0.85 | 0.84 | 0.82 | 0.80 | -. 06 |
| 24 | Farmington LMA | 0.96 | 0.95 | 0.96 | 0.90 | 0.92 | -. 04 |
| 25 | Calais LMA | 0.96 | 0.97 | 0.98 | 0.95 | 0.90 | -. 06 |
| $\begin{aligned} & 26 / \\ & 27 / \\ & 28 \\ & \hline \end{aligned}$ | Patten - Island Falls LMA <br> Millinocket - East Millinocket LMA Houlton LMA | 0.88 | 0.90 | 0.87 | 0.87 | 0.86 | -. 02 |
| 29 | Skowhegan LMA | 1.03 | 1.02 | 1.05 | 1.02 | 0.96 | -. 07 |
| $\begin{aligned} & 30 / \\ & 31 \end{aligned}$ | Greenville LMA <br> Dover - Foxcroft LMA | 0.95 | 0.95 | 0.94 | 0.92 | 0.92 | -. 03 |
| 32 | Presque Isle - Caribou LMA | 0.90 | 0.90 | 0.89 | 0.89 | 0.90 | +. 00 |
| $\begin{aligned} & 33 / \\ & 34 / \\ & 35 \end{aligned}$ | Van Buren LMA <br> Fort Kent LMA <br> Madawaska LMA | 0.99 | 1.00 | 0.98 | 0.97 | 0.95 | -. 04 |
|  | Lowest | 0.84 | 0.81 | 0.83 | 0.77 | 0.80 | -. 07 |
|  | Highest | 1.09 | 1.09 | 1.09 | 1.13 | 1.16 | +. 10 |
|  | Range | 0.25 | 0.28 | 0.26 | 0.35 | 0.36 | 0.17 |
|  | Maine | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | $\sim$ |

## Background Method: Old Modified LMAs and LMA Groups

Regional adjustments were calculated using updated teacher salary data for the same LMA groupings and assignments used in the past. The LMAs were previously designated by the Maine Department of Labor. They were based on commuting patterns revealed in data from the 1990 US Census. Although the geographic units of the EPS regional adjustment have been based on these 35 LMAs, they have not been used, and should not be used, directly without modification for two main reason. First, many Maine regionalized School Administrative Units (SAUs) contain towns in more than one LMA. The boundaries of some RSUs (Regional School Units) and MSADs (Maine School Administrative Districts) cross the boundaries of some LMAs resulting in a single SAU containing towns in more than one LMA. In these cases, each regionalized SAU was assigned to a single LMA based on the LMA where most of its resident students live. This process was completed initially based on 2004-05 data. As further regionalization occurred beginning around 2009-2010, each RSU established was assigned an LMA using the same process.

A second reason the 35 LMA were not used directly without modification as the geographic units for the EPS regional adjustment is that the smallest LMAs do not have a large enough number SAUs or full time teachers to perform a reliable regression analysis of teacher salaries, which is the statistical method used in calculating the regional adjustment within each LMA. In each of these cases, several small LMAs combined with each other or with a larger LMA to form an LMA group to use as a geographic unit. This process was completed during the initial calculation of the EPS regional adjustment, which used 2004-05 data. Twenty-five LMAs were held to be large enough to have their own regional adjustment. The other ten LMAs were combined into four LMA groups, two groups of two LMAs and two groups of three LMAs. A single Regional Adjustment was calculated for each of these LMAs and LMA groups during the initial calculation of the EPS Regional Adjustment and during each periodic review thereafter.

## Method: Proposed EPS Maine Teacher Market Areas (MTMAs)

The original Labor Market Areas and groupings have been used since the implementation of EPS, with changes only occurring as necessitated by new regional SAUs being established or memberships changing. However, between the time of the original implementation of EPS and now, the Labor Market Area definitions used for labor statistics by state and federal departments of labor have changed. The most significant change has been that each Metropolitan Statistical Area and Micropolitan

Statistical area are treated as a single Labor Market Area. There are several consequences to this change, and each of these consequences presents a challenge to updating the EPS Regional Adjustment to newer Labor Market definitions. First, some labor market areas are larger than previously. For example, the Bangor Metropolitan area contains what used to be the Bangor LMA as well as portions of the former Outer Bangor LMA. Second, some areas now cross state lines. For example, both the Portsmouth Metropolitan area and the Dover-Durham Metropolitan area are partly within Maine and partly within New Hampshire. Third, there are some towns, four in Maine, that are not in any labor market area, because they are between two Metropolitan or Micropolitan areas but not in either one.

As was the case for the original development of the EPS Regional Adjustment component, the newer LMAs were not and should not have been used in the updated EPS Regional Adjustment calculation. Four kinds of modifications were needed. Some were similar to modifications made in the original EPS labor market analysis. Others were new due to differences in the older and newer LMA definitions. First, as in the original EPS regional adjustment calculation, regional SAUs were assigned to the teacher market area where the greatest proportion of their students reside. For some member towns, this assignment is different from their own LMA as an individual town. Second, for Labor Market Areas partly in New Hampshire and partly in Maine, only the Maine portion was included in the proposed Maine teacher market areas. New Hampshire towns and cities were excluded. Third, towns that were not assigned an LMA by the US Department of Labor and were not part of a regional SAU were assigned to an adjacent teacher market area. Fourth and last, as in the original EPS LMA assignments, some labor market areas were combined with other areas due to having small numbers of SAUs and small numbers of teachers. In one case, Acton LMA, only two SAUs remained once regional SAUs were assigned. These two SAUs were not adjacent and were assigned to two different teacher market areas to assure that the resulting teacher market areas were geographically contiguous.
(See Appendix B for a listing of the specific necessary adaptations used to create usable MTMAs based on LMAs.)

## Results: Proposed EPS Teacher Market Areas

Statistics on the proposed Maine Teacher Market Areas are listed in Table 3. There are wide ranges in the number of SAUs, towns, students, and teachers in the proposed Teacher Market Areas because of the wide range of population density across Maine. The proposed Portland-South Portland Metropolitan TMA, with 50,056 students, includes $28 \%$ of statewide student enrollment. The four
highest enrollment areas together comprise more than half of the state's students. Each area has a sufficient number of teachers to run the regression models used in calculating the EPS regional adjustment. No SAU is its own region; there are at least three SAUs in each proposed area.

Table 3. Proposed EPS Maine Teacher Market Areas for Regional Adjustment Calculations (2016-17 Student and Staff Data)

| EPS Teacher Market Area (Proposed) | Number of SAUs | Number of Towns | Resident Enrollment | FTE <br> Teachers |
| :---: | :---: | :---: | :---: | :---: |
| 1 York-Wells TMA | 3 | 4 | 4,108 | 319.9 |
| 2 Sanford-Berwick TMA | 4 | 7 | 8,647 | 567.6 |
| 3 Portland-South Portland Metropolitan TMA | 22 | 40 | 50,056 | 3,330.3 |
| 4 Brunswick Micropolitan TMA | 6 | 12 | 7,502 | 545.2 |
| 5 Boothbay TMA | 12 | 15 | 2,106 | 132.7 |
| 6 Rockland-Camden TMA | 12 | 25 | 5,301 | 461.5 |
| 7 Paris-Fryeburg TMA | 3 | 20 | 5,528 | 350.4 |
| 8 Lewiston-Auburn Metropolitan TMA | 6 | 12 | 15,547 | 1,002.5 |
| 9 Augusta Micropolitan TMA | 8 | 28 | 13,294 | 885.7 |
| 10 Waterville Micropolitan TMA | 3 | 6 | 5,059 | 336.4 |
| 11 Belfast TMA | 5 | 22 | 3,624 | 259.8 |
| 12 Ellsworth TMA | 23 | 38 | 6,483 | 511.1 |
| 13 Machias TMA | 19 | 24 | 2,232 | 159.6 |
| 14 Rumford TMA | 5 | 19 | 3,265 | 245.6 |
| 15 Farmington TMA | 8 | 26 | 4,019 | 339.0 |
| 16 Skowhegan TMA | 12 | 22 | 4,495 | 304.1 |
| 17 Pittsfield TMA | 3 | 12 | 3,232 | 194.3 |
| 18 Bangor Metropolitan TMA | 19 | 39 | 15,549 | 1,051.8 |
| 19 Lincoln-Millinocket TMA | 12 | 17 | 2,138 | 145.8 |
| 20 Calais TMA | 20 | 20 | 1,804 | 139.3 |
| 21 Dover-Foxcroft TMA | 11 | 25 | 3,365 | 217.5 |
| 22 Houlton TMA | 8 | 28 | 2,632 | 178.0 |
| 23 Presque Isle-Fort Kent TMA | 21 | 41 | 6,913 | 473.4 |
| Lowest | 3 | 4 | 1,804 | 132.7 |
| Highest | 23 | 41 | 50,056 | 3,330.3 |
| Maine | 245 | 502 | 176,899 | 12,151.5 |

## Comparison of Old LMAs and LMA Groups to Proposed Maine TMAs

Adopting the proposed teacher market areas would result in fewer areas and be based on much newer demographic data, as shown by comparison summarized in Table 4. The proposed reduction in areas from 29 to 23 roughly parallels the reduction in LMAs from 35 to 30 . The modified LMA groups used for the current EPS regional adjustment were based on data that is now nearly 30 years old.

Table 4. Comparison of Old LMAs and LMA Groups to Proposed New Maine TMAs

| Modified Old LMAs and Groups | Proposed Maine TMAs |
| :---: | :---: |
| 29 Modified LMA Groups | 23 Proposed Maine TMAs |
| Based on 35 LMAs from 1990 Census | Based on 30 LMAs from 2010 Census |
| Modified due to: Regional SAUs crossing LMA borders Too few SAUs or teachers | Modified due to: <br> - Regional SAUs crossing LMA borders <br> - SAUs partly in New Hampshire <br> - Towns in between LMAs <br> - Too few SAUs or teachers |

## Methods: Calculating a Regional Adjustment for Proposed EPS Teacher Market Areas

A Regional Adjustment was calculated for the proposed Maine TMAs in the same way as the updated calculation for the old LMAs and LMA Groups. TMA average full-time teacher salaries were adjusted for the experience and education of teacher in the TMA using regression analysis. The adjusted salary is an estimate of what the average salary would be in the TMA if the experience and education levels were the same as the state as a whole. The regional adjustment is an index of those adjusted salaries with the statewide average salary represented by a value of 1.00 .

## Results: Calculating the Regional Adjustment Calculation for Proposed EPS Teacher Market Areas

The Regional Adjustment calculated for the proposed Maine TMAs is listed in Table 5. For each TMA the average annual teacher salary is shown as a dollar amount as well as indexed to the state, where 1.00 represents the statewide average annual teacher salary. As with the update using the old LMAs, adjusting the salaries for education and experience had an effect on most individual areas and resulted in a range of adjustments that was narrower than an index of unadjusted average salaries. The average salary adjusted for education and experience to the right of the indexed salary was used in computing the regional adjustment. Teachers in areas where the adjusted average salary is lower than the unadjusted average salary have on average fewer years of experience or a lower average educational attainment than in the state as a whole. The regional adjustment in the rightmost column is the adjusted average salary indexed to the state, where a 1.00 represents the state average. The 1.19 in the regional adjustment column for the York-Wells TMA means that after adjusting for the experience and education levels, averages salaries were $19 \%$ higher than the state average. The calculated regional adjustments ranged from a low of 0.80 in the Machias TMA and the Lincoln-Millinocket TMA to 1.19 in the YorkWells TMA. This was a smaller range than the unadjusted average salaries, which ranged from a 0.76 index in the Lincoln-Millinocket TMA to 1.21 in the York-Wells TMA.

## Comparison of update with old LMAs and proposed Maine TMAs

This is the first time a regional adjustment has been calculated for these regional groupings. As a result no previous adjustments are available for comparison. However, it is possible to compare the range of adjustments using the old LMAs versus the proposed Maine TMAs. Using the proposed TMAS resulted in a slightly wider range of regional adjustments, 0.80 to 1.19 , compared to the update of salary data only using the old LMAs, which ranged from 0.80 to 1.16 . Both of these ranges are wider than the range of the current EPS Regional Adjustment, 0.84 to 1.09 , based on 2004-05 salary data. This because the updated ranges are based on more recent salary data, and the differences between teacher salaries in low cost and high cost areas of the state have been widening since 2004-05.

Table 5. Regional Adjustment Calculation
For Proposed EPS Maine Teacher Market Areas (2016-17 Staff Data)

| EPS Teacher Market Area (Proposed) | Average <br> Teacher <br> Salary | Indexed <br> to State | Average Salary <br> Adjusted for <br> Education and <br> Experience | Regional <br> Adjustment |  |
| :--- | :--- | ---: | ---: | ---: | ---: |
| 1 | York-Wells TMA | $\$ 63,596$ | 1.21 | $\$ 62,418$ | 1.19 |
| 2 | Sanford-Berwick TMA | 53,835 | 1.02 | 54,609 | 1.04 |
| 3 | Portland-South Portland Metro TMA | 57,790 | 1.10 | 56,776 | 1.08 |
| 4 | Brunswick Micropolitan TMA | 57,445 | 1.09 | 53,838 | 1.02 |
| 5 | Boothbay TMA | 58,157 | 1.11 | 58,248 | 1.11 |
| 6 | Rockland-Camden TMA | 53,076 | 1.01 | 54,570 | 1.04 |
| 7 | Paris-Fryeburg TMA | 45,717 | 0.87 | 46,566 | 0.89 |
| 8 | Lewiston-Auburn Metropolitan TMA | 48,163 | 0.92 | 50,772 | 0.97 |
| 9 | Augusta Micropolitan TMA | 48,439 | 0.92 | 48,466 | 0.92 |
| 10 | Waterville Micropolitan TMA | 50,284 | 0.96 | 48,621 | 0.92 |
| 11 | Belfast TMA | 50,553 | 0.96 | 50,531 | 0.96 |
| 12 | Ellsworth TMA | 47,645 | 0.91 | 47,732 | 0.91 |
| 13 | Machias TMA | 40,345 | 0.77 | 42,295 | 0.80 |
| 14 | Rumford TMA | 50,252 | 0.96 | 49,572 | 0.94 |
| 15 | Farmington TMA | 49,339 | 0.94 | 48,394 | 0.92 |
| 16 | Skowhegan TMA | 51,942 | 0.99 | 50,656 | 0.96 |
| 17 | Pittsfield TMA | 47,077 | 0.90 | 50,340 | 0.96 |
| 18 | Bangor Metropolitan TMA | 53,265 | 1.01 | 52,607 | 1.00 |
| 19 | Lincoln-Millinocket TMA | 39,960 | 0.76 | 41,922 | 0.80 |
| 20 | Calais TMA | 46,012 | 0.88 | 48,763 | 0.93 |
| 21 | Dover-Foxcroft TMA | 46,359 | 0.88 | 48,640 | 0.93 |
| 22 | Houlton TMA | 44,660 | 0.85 | 45,407 | 0.86 |
| 23 | Presque Isle-Fort Kent TMA | 47,960 | 0.91 | 48,011 | 0.91 |
|  | Lowest | $\$ 39,960$ | 0.76 | $\$ 41,922$ | 0.80 |
|  | Highest | $\$ 3,596$ | 1.21 | $\$ 62,418$ | 1.19 |
|  | Maine | 52,572 | 1.00 | $\$ 52,572$ | 1.00 |

## Findings Part Two: Policy Options with Estimated Costs

A number of policy options were considered in this review based upon the updated calculations in Part I. Cost estimates and evaluations of these options are listed in Part II of this report.

## Policy Options

There are several options for what to do going forward with the EPS Regional Adjustment. Policymakers may decide to keep the regional adjustment as it is, change it, or eliminate it altogether. If a decision is made to change it, there are several ways to do so, including one or more of the following.

- Update the regional adjustment indices based on recent salary data.
- Update the geographic areas.
- Establish and Implement a minimum adjustment as a floor.
- Establish and Implement a maximum ceiling or cap. A floor or ceiling can be a fixed number, or a soft number that averages the actual adjustment with the target number.

Any number or combination of these modifications is possible. The updates to the salary data and geographic areas were introduced in Findings Part I of this report. A floor and/or ceiling would set limits to how low or how high a regional adjustment may be. Table 6 outlines several options for how these changes may be combined, which are evaluated in subsequent sections of this report.

Table 6. Policy Options Examined

| Policy Option |  | Description |
| :--- | :--- | :--- |
| Option 1 | $\begin{array}{l}\text { Remove the Regional } \\ \text { Adjustment from EPS }\end{array}$ | $\begin{array}{l}\text { Allocate school staff salaries in all regions based on statewide average } \\ \text { salaries (in effect, setting regional index to 1.00 for all regions). }\end{array}$ |
| Option 2 | $\begin{array}{l}\text { Status Quo: No } \\ \text { change }\end{array}$ | $\begin{array}{l}\text { Continue using the existing Regional Adjustment based on 2004-05 } \\ \text { salary data with geographic areas based on 1990 US Census. }\end{array}$ |
| Option 3 | $\begin{array}{l}\text { Update Salary data } \\ \text { only }\end{array}$ | $\begin{array}{l}\text { Update the Regional Adjustment using 2016-17 teacher salary data but } \\ \text { continue using geographic areas based on 1990 US Census. }\end{array}$ |
| Option 4 | $\begin{array}{l}\text { Update Salary Data } \\ \text { and Regions }\end{array}$ | $\begin{array}{l}\text { Update the Regional Adjustment using 2016-17 teacher salary data and } \\ \text { use geographic areas based on current US Department of Labor LMAs. }\end{array}$ |
| $\begin{array}{l}\text { Modified } \\ \text { Options }\end{array}$ | $\begin{array}{l}\text { Add a floor or ceiling } \\ \text { to Options 2,3, or 4 }\end{array}$ | $\begin{array}{l}\text { Modify the adjustment in Option 1, 2, or 3 by: } \\ \text { A. Adding a floor (e.g., bring all adjustments to become at least 0.90, } \\ 0.93,0.95, \text { or 1.00) }\end{array}$ |
| B. Adding a floor and a fixed ceiling (e.g., cap maximum adjustment |  |  |
| at 1.09) |  |  |$\}$| C. Add a floor and a soft cap (e.g. a floor of 0.93 while bringing those |
| :--- |
| above 1.07 halfway down to 1.07) |

In addition to options about how to calculate a regional adjustment, there are related policy decisions. One example that has been considered in the past is to require actual salary increases to qualify for a higher minimum regional adjustment. This was included in the Report of the EPS Commission to Study the Adequacy and Equity of Certain Cost Components of the School Funding Formula, 2015, as part of the Betit proposal. The purpose of this proposed policy was to provide an incentive to SAUs with lower salaries to raise them closer to the state average. Without this policy, SAUs would be allowed to use funds from the higher regional adjustment on other priorities while keeping actual salaries below the regionally adjusted EPS salaries.

## Cost Estimates

Simulations of each selected policy option were run to determine the regional adjustment in each geographic area and to estimate how much the EPS allocations would change in the SAUs in each area. The change in cost allocation statewide and within each geographic area was estimated based on the actual school staffing levels within each area. These amounts were based on actual total full-time equivalent (FTE) teacher counts within each area and increased to estimate allocations for all EPS school staff positions. They were not based on EPS recommended staffing or weighted pupil counts.

A summary of the cost of each option is provided in Table 7. The total cost is the estimated change in cost allocation in all SAUs. Increased cost allocations in all options would be borne in part by the state through higher subsidies and in part by local governments through a higher property tax mill rate expectation and required local share. The state share is the estimated net increase (or decrease) in state subsidy to SAUs assuming a $55 \%$ state share percentage. The local share is the estimated increase in local required amount assuming a $45 \%$ local share percentage. These amounts are thus only estimates, because the exact state share percentage may be related to whether a district has a projected change in allocation; i.e. if districts receiving increases tend to have less property wealth, the actual state share may be higher than $55 \%$. The increased local required amount would mean an increased property tax mill rate expectation. The numbers of SAUs with increases and decreases along with the estimated amounts are also shown, as is the range of regional adjustments under each policy option. The detailed results for selected policy options by SAU within each geographic area are available in the Tables of Appendix C.

The status quo, Option 2, is listed as no cost, because it is the option to which the others were compared. Some of the options examined are estimated to lower the total allocation for salaries. Option

4, for example, updating the adjustment to reflect more recent salary data and geographic data, would result in an estimated $\$ 3.9$ million lower total allocation than the retaining the status quo. Assuming a $55 \%$ state share and a $45 \%$ local share, this would amount to a lower state share by $\$ 2.2$ million and a lower local share by $\$ 1.8$ million. A lower state share would mean a lower state subsidy, assuming no other changes to the EPS model. A lower local share would result in a lower required mill rate for education, if no other changes were made.

The options affect the allocations of each SAU differently, as shown in the columns of Table 7 showing the increases and decreases. Option 1 for example, removing the regional adjustment altogether, has a modest estimated net cost reduction of $\$ 0.9$ million. But figuring into that modest reduction are a substantial increase of $\$ 22.6$ million in 116 SAUs along with a reduction of $\$ 23.5$ million in 66 other SAUs.

Table 7. Estimated Cost of Policy Options (\$millions)

| Policy Option Simulation | Total Cost | State <br> Share ${ }^{+}$ | Local Share ${ }^{+}$ | SAUs with Increase |  | SAUs with Decrease |  | Range |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1* Remove Adjustment (all 1.00) | -\$ 0.9 | -\$ 0.5 | -\$ 0.4 | 116 | \$ 22.6 | 66 | -\$ 23.5 | All=1.00 |
| 2 Status Quo (no update) | \$ 0.0 | \$ 0.0 | \$ 0.0 | 0 | \$ 0.0 | 0 | \$ 0.0 | 0.84-1.09 |
| 2A. $1 \quad$ Floor $=1.00$ Old LMA | \$ 22.6 | \$ 12.4 | \$ 10.2 | 116 | \$ 22.6 | 0 | \$ 0.0 | 1.00-1.09 |
| 2A. $2 \quad$ Floor $=0.95$ Old LMA | \$ 6.6 | \$ 3.6 | \$ 3.0 | 66 | \$ 6.6 | 0 | \$ 0.0 | 0.95-1.09 |
| 2A.3* Floor $=0.93$ Old LMA | \$ 3.8 | \$ 2.1 | \$ 1.7 | 39 | \$ 3.8 | 0 | \$ 0.0 | 0.93-1.09 |
| 2A. $4 \quad$ Floor $=0.90$ Old LMA | \$ 1.6 | \$ 0.9 | \$ 0.7 | 28 | \$ 1.6 | 0 | \$ 0.0 | 0.90-1.09 |
| 3 Update Salary Data, Old LMAs | -\$ 4.7 | -\$ 2.6 | -\$ 2.1 | 49 | \$ 8.6 | 108 | -\$ 13.3 | 0.80-1.16 |
| 3A. $1 \quad$ Floor $=1.00$ Old LMA | \$ 28.4 | \$ 15.6 | \$ 12.8 | 158 | \$ 30.9 | 22 | -\$ 2.5 | 1.00-1.16 |
| 3A. 2 Floor $=0.95$ Old LMA | \$ 8.8 | \$ 4.9 | \$ 4.0 | 108 | \$ 14.9 | 47 | -\$ 6.1 | 0.95-1.16 |
| 3 A .3 Floor $=0.93$ Old LMA | \$ 3.2 | \$ 1.8 | \$ 1.5 | 88 | \$ 12.4 | 78 | -\$ 9.1 | 0.93-1.16 |
| 3A. $4 \quad$ Floor $=0.90$ Old LMA | -\$ 1.8 | -\$ 1.0 | -\$ 0.8 | 77 | \$ 10.2 | 92 | -\$ 12.0 | 0.90-1.16 |
| $3 B^{*} \quad$ Floor 0.93, Ceiling 1.09 | -\$ 0.4 | -\$ 0.2 | -\$ 0.2 | 88 | \$ 8.7 | 78 | -\$ 9.1 | 0.93-1.09 |
| 3C* Floor 0.93, Soft cap 1.07 | \$ 0.3 | \$ 0.2 | \$ 0.2 | 88 | \$ 9.5 | 78 | -\$ 9.1 | 0.93-1.12 |
| 4 Update Salary Data, New TMAs | -\$ 3.9 | -\$ 2.2 | -\$ 1.8 | 57 | \$ 9.4 | 114 | -\$ 13.4 | 0.80-1.19 |
| 4B* Floor 0.93, Ceiling 1.09 | \$ 0.7 | \$ 0.4 | \$ 0.3 | 76 | \$ 9.7 | 82 | -\$ 9.0 | 0.93-1.09 |
| 4C* Floor 0.93, Soft cap 1.07 | \$ 1.6 | \$ 0.9 | \$ 0.7 | 77 | \$ 10.6 | 82 | -\$ 9.0 | 0.93-1.13 |

*See tables in Appendix C for cost estimates by SAU
${ }^{+}$State and local shares are estimates based on a $55 \%$ state share. Actual breakdowns may vary based on the actual state shares in each SAU after minimum mill rate expectations have been applied.

## Evaluation \& Discussion of Policy Options

## General Discussion

An analysis was conducted to aid in evaluation of the policy options, keeping in mind (1) that the purpose of the EPS funding model is to provide adequate educational resources to give every student an equitable opportunity to achieve the state learning standards and (2) that the purpose of the Regional Adjustment Component of EPS is to make sure that the allocation dollars are sufficient to purchase the necessary educational human resources for providing this equitable educational opportunity in all areas of the state.

The overarching finding of this review is that salary gaps have continued to widen across the state in each successive review of the regional adjustment component. There are at least two factors that contribute to this divergence over time: changing underlying differences in labor markets across different parts of the state, and the changing ability of individual districts to raise adequate funds to hire and retain highly-qualified teachers. An example of the former is a diminishing supply of teachers across New England, which puts increased pressure on districts close to New Hampshire and Massachusetts to raise salaries. Areas of the state with tighter labor markets overall (lower unemployment rates) will also have increased pressure to raise salaries to keep the teachers they have from leaving for other types of employment, while areas with less economic growth will be more able to retain teachers without offering raises. An example of changing ability to pay would include a town with markedly decreased property wealth due to closure of a large employer, such as a paper mill. When these towns seek to raise budgets to pay for needed cost of living increases, the funds must be raised from a smaller pool of property values, hitting residential taxpayers' wallets on top of the other challenges from community job losses. Such districts can struggle to pass budgets, and their teacher salaries may not remain adequate.

Since the goal of the Essential Programs and Services funding model is to provide the resources necessary to provide equitable educational opportunity to all students-regardless of their district's wealth-the challenge is to establish a geographic index that adjusts for labor market realities but not community wealth. In districts where teacher salaries are lower (or higher) than what is needed to attract and retain enough qualified teachers, those actual salaries may not be valid estimates of a fair and adequate labor market. In that case, using them as indicators of labor market variation would introduce error, which may in turn exacerbate inequities based on ability to pay. However, there is no data source that exists to make it possible to readily identify whether the teachers that are paid by a given district's salaries are adequate. Anecdotal reports suggest that smaller, lower-income, and rural schools have a
harder time retaining qualified teachers; these were corroborated by a recent MEPRI study of Maine teacher turnover (MEPRI, 2018), which discerned a pattern of teacher movement for higher pay. Lacking empirical data to inform the question, we are left to make inferences that salaries at both the high and low ends of each labor market are likely influenced by community wealth in addition to true regional variations.

In addition, it is important to recognize that increasing the EPS cost allocation for salaries does not guarantee an increase in actual local salaries. If the allocation provides more funding than the district needs to cover its contractual salary commitments, it may choose to spend the surplus allocation on other local priorities than increasing salaries. This is true of all options. With those issues in mind, the following sections evaluate the results of each of the proposed policy options.

## Option 1: Remove adjustment

Option 1 would set all regional adjustment factors to the state average of 1.00 , effectively removing the regional adjustment. This option would bring more allocation and subsidy to the lower cost areas of the state, and has a slightly lower estimated cost than the status quo. However, although the total net cost reduction is small, there would be a large reduction in cost allocations in the higher cost areas of the state ( $\$ 23.6$ million in 66 SAUs). As a result, the EPS cost allocation dollars would be insufficient to provide the EPS recommended level of staffing in the higher cost geographic areas. This type of inadequacy is contrary to the purpose of the regional adjustment and the EPS cost model to provide equitable access to education resources for all students in all areas of the state. In addition, because Option 1 does not include a safeguard to ensure that additional funds are spent on raising salaries, regional variation in actual salaries may continue to widen even if the regional adjustment is removed from the funding model. A table providing cost estimates for Option 1 by SAU is included in Appendix C.

MEPRI researchers do not recommend Option 1, as it undermines the linked goals of adequacy and efficiency for the EPS funding formula. This analysis and review of the regional adjustment component corroborates and describes the patterns of regional variation in salaries that exist above and beyond district-to-district differences in ability to pay. Some areas of the state require higher salaries than average, and some require lower than average based on established labor market norms. If the regional adjustment were removed, then districts in high-cost parts of the state would not be allocated enough funds to meet their salary requirements, and may not be able to compete with adjoining labor market areas for teachers. This is a concern for adequacy. Conversely, districts that pay below the state
average would receive more funds or have a higher local required amount than they actually need to meet their contractual obligations. This raises concerns about overall efficiency.

## Option 2: Status quo

Option 2, keeping the status quo, is designated as the no-cost option, as the other options are evaluated relative to it. This option has been chosen by policymakers during each of the previous review cycles. The regional adjustment has not been updated since its initial inclusion in the original implementation of EPS for Fiscal Year 2005-06. The primary reason given for keeping the status quo has been the widening of the geographic variation in actual salaries and the resulting widening of the range of updated regional adjustment calculations. The range has continued to widen within the current analysis and review.

Retaining the status quo prevents widening the range of adjustments and protects SAUs from decreases in allocations that would reflect changes in actual market area salaries in regions where teacher salaries have not kept pace with the rest of the state. One drawback of this option is that the status quo does not reflect current reality of regional variation in teacher salaries. Salaries in some areas have increased more than the state average, and some less. As a result, some lower cost areas have moved closer to the state average, and some have moved further away. The same is true of higher cost areas. The current regional adjustments based on Fiscal Year 2004-05 salaries do not reflect these changes.

Another drawback is that concerns have been raised about the adequacy of the funding levels for those furthest below the state averages, as discussed above. The districts whose indices have dropped since 2005 are currently receiving more allocation per EPS teacher than they are actually spending; this is why the spending gap has grown. If the current below-average salaries are inadequate, then decreasing the funding provided to those districts may further hamper efforts to raise salaries to be more competitive with other labor markets.

Under Option 2A, the addition of several different floors to the current, non-updated model was examined. Option 2A. 1 is a floor of 1.00 . All areas with an adjustment below 1.00 would be raised to 1.00 , while those above 1.00 would receive their actual adjustment. The advantage of this option is that it would provide increased allocation in all areas of the state with below-average salary costs. The main drawback of this option is the high cost of an estimated $\$ 22.5$ million, including an estimated state subsidy increase of $\$ 12.4$ and an increased required mill rate to yield a 10.2 million increase in the local required share. The cost may be justified if it meets enough policy objectives to be a priority initiative.

However, as in Option 1, it is important to note that EPS allocations need not be used by SAUs to pay for the exact resources in the EPS model. The EPS model is considered one way of implementing, but whether to choose that way or another is treated as a local decision. Thus, SAUs currently paying lower salary rates could continue to pay lower salary rates, subject to the teacher minimum salary, even if the EPS allocation was calculated on a higher amount. If such an option is chosen, policymakers may consider whether to add a requirement that low salary SAUs increase actual salaries as a condition for receiving the higher regional adjustment (as in the Betit proposal discussed above).

Options 2A. 2 through 2A. 4 -floors of $0.95,0.93$, and 0.90 , respectively-are lower cost alternatives to the floor of 1.00 . Each would institute a minimum regional adjustment. They provide a smaller amount of additional subsidy to the lowest salary areas of the state resulting in lower net state and local shared costs. The floor of 0.90 has the lowest cost estimate of $\$ 1.6$ million. The floor of 0.93 and 0.95 have moderate cost estimates of $\$ 3.8$ million and $\$ 6.6$ million respectively.

MEPRI researchers do not recommend keeping the status quo, due to the aforementioned concerns that widening pay disparities are resulting in inequities for teachers in the current funding system. However, instituting a floor of some kind, as in options 2.A. 2 through 4, would mitigate the risk of underfunding in the areas of the state with below-average. Option 2.A. 1 is less preferred because it sets a minimum index at the state average; by definition, the average is above the level that half of Maine's SAUs are currently paying, and thus is a likely over-estimate of adequate salaries for many districts.

## Option 3: Update Salary Data

Option 3, updating the indices to reflect current data, has the advantage of using more recent salary data and thus reflects current salary cost differences. It also has an estimated cost reduction of $\$ 4.7$ million, which is the net total of allocation increases of $\$ 8.6$ million in 49 SAUs and decreases of $\$ 13.3$ million in 108 SAUs. However, as in previous updates, the newly calculated regional adjustment has widened to a range of 0.80 to 1.16 as a result of the increasing geographic differences in actual salaries.

Several types of modifications of Option 3 were examined, including four different floors and two options with both a floor and a modification at the higher end. The lowest cost areas would receive an increased cost allocation because of the floor. Even with the modifications at the high end, some high cost areas may still see an increased cost allocation compared to the current EPS regional adjustment,
but not as much as the actual salary increases in the highest cost areas as reflected in the updated regional adjustment calculations.

Options 3A. 1 through 3A. 4 provide floors similar to those under Option 2A. The primary advantage of these options modifications is in providing increased subsidies to lower salary areas of the state. The main disadvantage is the cost. The highest cost option of all options analyzed in this review is Option 3A.1, an update of the regional adjustment based on new salary data together with a floor of 1.00. The estimated total cost is $\$ 28.4$ million. Options 3A. 2 through 3A.4, floors of $0.95,0.93$, and 0.90 , provide a lower cost way of providing more subsidy to lower cost areas of the state by mitigating the negative effect on EPS cost allocations of the low actual salaries in those areas, which are not keeping pace with the rest of the state. None of the floors guarantee increases in actual salaries or prevent the continued widening of regional salary differences.

Option 3B provides a minimum adjustment floor of 0.93 and caps the maximum adjustment at 1.09, which is equal to the highest current adjustment. Capping the adjustment lowers the total cost, resulting in an overall estimated allocation reduction of $\$ 0.4$ million. The floor provides additional subsidy to the lowest cost areas of the state. The current reality of regional cost differences is better reflected among those areas between the 0.92 and 1.09 . Necessarily, this means some areas will experience lower adjustments, specifically 78 SAUs with an estimated reduction of $\$ 9.1$ million in allocation. Another possible drawback is that the cap may result in allocations that are inadequate to provide equitable educational resources in some higher cost areas. As noted in the evaluation of Option 1 , removing the regional adjustment, this type of inadequacy is contrary to the purpose of the regional adjustment and the EPS cost model in general.

Option 3C, which has a floor of 0.93 and a soft cap of 1.07 , is an attempt to provide a balanced approach, recognizing the increasingly higher cost of labor in parts of the state, while at the same time acknowledging some portion of the salary increases may be due to the higher local ability to pay rather than strictly higher salary requirements of teachers. Areas above the soft cap of 1.07 receive an adjustment halfway between 1.07 and the calculated adjustment. For example, the calculated adjustment for Kittery - York LMA is 1.16 . Under Option 3C, it would receive an adjustment halfway between 1.07 and 1.16 , which is 1.12 . The result is a range of adjustments from 0.93 to 1.12 . The cost is a relatively low estimated $\$ 0.3$ million. The floor provides an increase to the lowest cost areas. And the cost is more reflective of actual salary differences in the middle and higher cost areas of the state. As in Option 3B, there are areas whose salaries have not kept pace with the state average, resulting in reduced adjustments
under this option. They are the same 78 SAUs and $\$ 9.1$ million as in Option 3B. It is possible though less likely that this option also provides inadequate resources in the higher cost areas. However, they would be closer to adequate than either Option 3B or the status quo.

## Option 4: Update Labor Market Areas

Option 4, like option 3, has the advantage of using more recent salary data and thus reflects current salary cost differences. Additionally, because it is based on new Labor Market Areas, it has the advantage of reflecting current analysis and policy regarding geographic areas and connections. Intuitively, without looking at the results, Option 4 should be the best. And its cost is low with a total cost allocation of $\$ 3.9$ million lower than the status quo. However, similarly to Option 3, the continued widening range of geographic differences in actual salaries results in a wider newly calculated regional adjustment. This option, unmodified, has the widest range of adjustments, from 0.80 to 1.19.

Furthermore, the change to fewer and larger Labor Market Areas, especially in Metropolitan and Micropolitan Statistical Areas, results in greater variation in salaries within the larger TMAs. For example, the Bangor Metropolitan TMA includes SAUs that were previously in the Outer Bangor LMA as well as other lower cost areas. This results in a reduced adjustment for the SAUs that were previously in the Bangor LMA (from 1.02 to 1.00 ) and increased adjustments in the SAUs that were previously in the Outer Bangor LMA (from 0.89 to 1.00 ) and other lower cost nearby LMAs. The wider range of adjustments can be mitigated by modifying the adjustment with a floor and a cap, but the effect of the larger areas would not be affected by the floor or cap.

Options 4B and 4C provide modifications to Option 4, by combining the update of salary data and geographic areas with a floor and either a hard cap or soft cap, respectively, similar to Options 3B and 3C. As such they share some of the same pros and cons as these options. Because the salary data is newer, they provide an adjustment close to current reality of geographic salary cost variation. They rely on geographic areas that fit current national policy. They are relatively low cost, an estimated $\$ 0.7$ million for Option 4B and $\$ 1.6$ million for Option 4C. Because of the floor, both options provide an increased allocation in the low cost areas, although without guaranteeing actual salary increases.

Similar to Options 3B and 3C, they may suffer some degree of inadequacy in the highest salary areas, which is mitigated somewhat by the soft cap in Option 4C. But in both cases, they are at least as adequate as the status quo, which has a top adjustment of 1.09. The highest adjustments for Options 4B and 4 C are 1.09 and 1.13 , respectively. They also both have a drawback in common with Option 4 in that the larger areas provide greater variation within the large regions, such as the Bangor Metropolitan

TMA, resulting in a reduced adjustment in some SAUs and an increase in others as higher and lower cost regions are recombined.

Because the updated labor market areas would have a large and sudden impact on a handful of districts, we do not recommend adopting them at this time. The new labor market areas based on large metropolitan and micropolitan areas appear to capture too many districts in greater Portland and greater Bangor, thus losing some of the more granular distinctions between high-cost and low-cost outlying areas. Also, because there will be yet another round of labor market area updates prepared in the near future when the 2020 census data are available, it is preferable to wait until those have been determined by the Department of Labor.

## Summary of MEPRI Recommendations

As detailed in the evaluation and discussion above, it appears likely that the practice of using salary data as a measure of regional differences in labor markets is imperfect. Salaries are indeed influenced by labor market factors (e.g. cost of living differences, regional competition for jobs, etc.), as can be seen by overall patterns that vary systematically across the state. This is best demonstrated by the finding that there are high-poverty districts in some parts of the state that pay at or above the state average, and low-poverty districts elsewhere that are able to pay below the state average. However, salaries also depend on each district's ability to raise taxpayer funds in annual budget discussions. This can be seen in the comparative salaries within each labor market area, with poorer districts generally paying lower than neighboring wealthy districts. Thus salaries at the both the lowest and highest ends of the spectrum can reasonably be presumed to be influenced by community wealth, and are not solely a reflection of regional differences. Thus MEPRI recommends the following options.

1. Each successive analysis of the regional adjustment component has validated that there are patterns of variation across the state that are persistent and unrelated to wealth. In the spirit of an adequacy-based funding formula, we recommend retaining a regional adjustment index to promote equitable distribution of resources.
2. To mitigate the effect of inability to raise sufficient funding in lower-income communities, it would be beneficial to institute a minimum "floor" to ensure that each district raises funds that are adequate to attract teachers. This floor should be less than 1.00 , as long as 1.00 is defined as the state average, since typical and expected regional labor market variation means that some districts can attract teachers with below-average salaries. These communities
should not be expected to raise more taxpayer funds than are needed to provide adequate resources. ${ }^{1}$
3. As a corollary to a floor, it would also be beneficial to institute a maximum adjustment. The communities at the very top of the pay scales are more able to raise taxpayer funds to pay higher salaries that will entice teachers from lower-paying districts (and retain the teachers they have). This is an endogenous phenomenon, and predictably benefits those who are able to pay. However, scarce state taxpayer dollars are best directed at ensuring minimum adequacy. This could be achieved by either: a) instituting a fixed or soft cap, or b) keeping the current regional adjustments in place (at a maximum is 1.09 ) rather than updating based on newer salary data.
4. MEPRI does not recommend updating the boundaries of the geographic areas to newer Teacher Market Areas at this time. The newer, larger, regions do not appear to be as cohesive as those currently in use, and updated labor market areas will be developed in the next few years using updated Census data. MEPRI should continue to monitor geographic variation in teacher salaries during future periodic reviews of the EPS Regional Adjustment, particularly when new labor market areas are generated based on 2020 Census data, and recommend changes as appropriate.
5. Schedule an interim review(s) of the EPS Salary Matrices and the EPS Regional Adjustment to make use of FY2021 salary data in order to monitor the impact of having a \$40,000 minimum teacher salary. This policy change will influence teacher salary schedules in each district resulting in changes to geographic variation in teacher salaries and the regional adjustment. This review should closely examine salary changes in the lower-salary areas of

[^0]the state compared to the state as a whole. It may be appropriate to extend the timeline for providing additional state subsidy to the districts most affected by the new minimum salary requirement in order to phase in the increased share for local taxpayers more gradually.

## References

MEPRI (2018). Teacher Turnover in Maine: Analysis of Staffing Patterns 2005-06 to 2016-17. Available at mepri.maine.edu/posts.

MEPRI (2015). Report of the Commission to Study the Adequacy and Equity of Certain Cost Components of the School Funding Formula - Report to Joint Standing Committee on Education and Cultural Affairs - Maine State Legislature. Available at https://usm.maine.edu/cepare/schoolfunding.

Appendix A: Calculating an Updated Regional Adjustment
Table A1. Regional Adjustment Calculation by LMA Group (Old LMAs, 2016-17 Staff Data)

|  | Labor Market Area (LMA) | ```Intercept (First Year Bachelor's Degree)``` | Experience Coefficient (First 20 Years) | Experience Coefficient (Beyond 20 Years) | Education Coefficient | Average Salary <br> Adjusted for Education and Experience | Regional Adjustment |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Kittery - York LMA | \$ 42,227 | \$ 1,235 | \$ 0 | 1.089 | \$ 61,026 | 1.16 |
| 2 | Sanford LMA | 33,943 | 1,252 | 278 | 0.481 | 51,971 | 0.99 |
| 3 | Biddeford LMA | 37,752 | 1,284 | 316 | 0.709 | 56,997 | 1.08 |
| 4 | Greater Portland LMA | 37,327 | 1,315 | 252 | 1.030 | 57,729 | 1.10 |
| 5 | Bath - Brunswick LMA | 32,946 | 1,326 | 578 | 0.852 | 53,942 | 1.03 |
| 6 | Boothbay Harbor LMA | 38,530 | 1,369 | 395 | 0.540 | 58,564 | 1.11 |
| 7/10 | Sebago Lake LMA <br> Norway - Paris LMA | 32,443 | 946 | 311 | 0.747 | 47,532 | 0.90 |
| 8 | Lewiston - Auburn LMA | 33,740 | 1,108 | 409 | 0.615 | 50,772 | 0.97 |
| 9 | Rockland LMA | 36,325 | 1,136 | 284 | 0.988 | 54,441 | 1.04 |
| 11 | Stonington LMA | 35,408 | 634 | 673 | 0.890 | 48,112 | 0.92 |
| 12 | Augusta LMA | 31,600 | 1,068 | 626 | 0.520 | 48,503 | 0.92 |
| 13 | Waterville LMA | 34,644 | 827 | 761 | 0.420 | 48,621 | 0.92 |
| 14 | Belfast LMA | 33,928 | 1,243 | 0 | 0.478 | 50,994 | 0.97 |
| 15 | Bucksport LMA | 30,759 | 977 | 600 | 0.294 | 45,759 | 0.87 |
| 16 | Jonesport - Milbridge LMA | 32,841 | 622 | 300 | 0.472 | 43,000 | 0.82 |
| 17 | Bangor LMA | 32,189 | 1,394 | 293 | 1.060 | 53,792 | 1.02 |
| 18 | Machias - Eastport LMA | 31,771 | 767 | 165 | 0.668 | 43,920 | 0.84 |
| 19 | Dexter - Pittsfield LMA | 32,096 | 1,130 | 339 | 0.893 | 50,030 | 0.95 |
| 20 | Ellsworth - Bar Harbor LMA | 34,624 | 856 | 527 | 0.407 | 48,216 | 0.92 |
| 21 | Outer Bangor LMA | 31,655 | 961 | 380 | 0.325 | 45,867 | 0.87 |
| 22 | Rumford LMA | 33,879 | 982 | 441 | 0.666 | 49,572 | 0.94 |
| 23 | Lincoln - Howland LMA | 30,788 | 628 | 536 | 0.551 | 41,973 | 0.80 |
| 24 | Farmington LMA | 33,907 | 971 | 473 | 0.278 | 48,395 | 0.92 |
| 25 | Calais LMA | 32,045 | 1,205 | 80 | 0.006 | 47,450 | 0.90 |
| 26/27/28 | Patten - Island Falls LMA <br> Millinocket - East Millinocket LMA Houlton LMA | 30,856 | 966 | 373 | 0.419 | 45,396 | 0.86 |
| 29 | Skowhegan LMA | 33,752 | 1,143 | 207 | 0.631 | 50,656 | 0.96 |
| 30/31 | Greenville LMA <br> Dover - Foxcroft LMA | 32,146 | 1,065 | 281 | 0.576 | 48,126 | 0.92 |
| 32 | Presque Isle - Caribou LMA | 30,672 | 1,036 | 378 | 0.906 | 47,577 | 0.90 |
| 33/34/35 | Van Buren LMA Fort Kent LMA Madawaska LMA | 36,459 | 701 | 573 | 0.917 | 49,785 | 0.95 |
|  | Lowest | \$ 30,672 | \$ 622 | \$ 0 | 0.006 | \$ 41,973 | 0.80 |
|  | Highest | \$ 42,227 | \$ 1,394 | \$ 761 | 1.089 | \$ 61,026 | 1.16 |
|  | Maine | \$ 34,044 | \$ 1,150 | \$ 347 | 1.000 | \$ 52,572 | 1.00 |

Appendix B: Updating from Old LMAs and LMA Groups to Proposed Maine Teacher Market Areas

Proposed MTMAs were based on 30 Labor Market Areas, which in turn were based on 2010 census data and are recognized by US Department of Labor.

| Table B1. LMAs by Town (Count includes Unorganized Territory) |  |  |
| ---: | :--- | ---: |
| LMA | LMA Name | Towns |
| 1 | Portsmouth, NH-ME Metropolitan NECTA | 3 |
| 2 | Dover-Durham, NH-ME Metropolitan NECTA | 3 |
| 3 | Wells, LMA | 3 |
| 4 | Sanford, Micropolitan NECTA | 2 |
| 5 | Acton, LMA | 5 |
| 6 | Portland-South Portland, Metropolitan NECTA | 39 |
| 7 | Brunswick, Micropolitan NECTA | 14 |
| 8 | Boothbay, LMA | 4 |
| 9 | Waldoboro, LMA | 12 |
| 10 | Rockland-Camden, LMA | 21 |
| 11 | Conway, NH- LMA | 6 |
| 12 | Bridgton-Paris, LMA | 11 |
| 13 | Lewiston-Auburn, Metropolitan NECTA | 16 |
| 14 | Augusta, Micropolitan NECTA | 22 |
| 15 | Waterville, Micropolitan NECTA | 9 |
| 16 | Belfast, LMA | 19 |
| 17 | Ellsworth, LMA | 41 |
| 18 | Machias, LMA | 23 |
| 19 | Rumford, LMA | 19 |
| 20 | Farmington, LMA | 31 |
| 21 | Skowhegan, LMA | 26 |
| 22 | Pittsfield, LMA | 11 |
| 23 | Bangor, Metropolitan NECTA | 46 |
| 24 | Lincoln, LMA | 43 |
| 25 | Calais, LMA | 43 |
| 26 | Dover-Foxcroft, LMA | 4 |
| 27 | Millinocket, LMA | 22 |
| 28 | Houlton, LMA | 22 |
| 29 | Presque Isle, LMA | 11 |
| 30 | Madawaska, LMA | 29 |
| 99 | Isolated Town | 41 |
|  | Grand Total | 4 |
|  |  | 4 |

Adaptations to LMAs needed to be usable areas for calculating an EPS Regional Adjustment

1. Each SUA with towns in multiple LMAs (Table B2) was assigned to the LMA with greatest number of their resident students (Table B3).
2. Isolated towns were assigned to an adjacent LMA.
3. SAUs from the 30 LMAs with too few teachers or SAUs to compute a valid regional adjustment were assigned to an adjacent area, resulting in 23 proposed MTMAs

Table B2. SAUs with towns in more than one LMA

|  | SAU | LMAs | Enroll | Largest LMA | Percentage | LMA |
| :--- | :--- | ---: | ---: | ---: | ---: | ---: |
| 3156 | RSU 02 | 4 | 2,036 | 728 | $36 \%$ | 14 |
| 1234 | RSU 40/MSAD 40 | 2 | 1,809 | 1,011 | $56 \%$ | 10 |
| 1229 | RSU 35/MSAD 35 | 2 | 2,236 | 1,268 | $57 \%$ | 2 |
| 3165 | RSU 19 | 2 | 2,075 | 1,286 | $62 \%$ | 22 |
| 1249 | RSU 55/MSAD 55 | 2 | 1,018 | 644 | $63 \%$ | 5 |
| 1255 | RSU 61/MSAD 61 | 2 | 1,831 | 1,195 | $65 \%$ | 6 |
| 3157 | RSU 04 | 2 | 1,511 | 1,000 | $66 \%$ | 13 |
| 3164 | RSU 18 | 2 | 2,854 | 1,900 | $67 \%$ | 14 |
| 1240 | MSAD 46 | 2 | 896 | 600 | $67 \%$ | 26 |
| 1251 | RSU 57/MSAD 57 | 4 | 3,099 | 2,171 | $70 \%$ | 6 |
| 3159 | RSU 10 | 3 | 2,570 | 1,906 | $74 \%$ | 19 |
| 1254 | RSU 60/MSAD 60 | 2 | 2,987 | 2,320 | $78 \%$ | 2 |
| 1261 | RSU 68/MSAD 68 | 2 | 1,017 | 830 | $82 \%$ | 26 |
| 1247 | RSU 53/MSAD 53 | 2 | 1,037 | 862 | $83 \%$ | 22 |
| 1235 | RSU 41/MSAD 41 | 2 | 674 | 561 | $83 \%$ | 26 |
| 3174 | RSU 39 | 2 | 1,302 | 1,092 | $84 \%$ | 29 |
| 1197 | RSU 03/MSAD 03 | 2 | 1,337 | 1,164 | $87 \%$ | 16 |
| 1265 | RSU 74/MSAD 74 | 2 | 664 | 586 | $88 \%$ | 21 |
| 3175 | RSU 67 | 2 | 931 | 843 | $91 \%$ | 24 |
| 1284 | Airline CSD | 2 | 46 | 42 | $91 \%$ | 23 |
| 3160 | RSU 12 | 3 | 1,496 | 1,369 | $92 \%$ | 14 |
| 3217 | RSU 22 | 2 | 2,361 | 2,175 | $92 \%$ | 23 |
| 1211 | RSU 17/MSAD 17 | 2 | 3,405 | 3,195 | $94 \%$ | 12 |
| 3184 | RSU 78 | 2 | 197 | 185 | $94 \%$ | 20 |
| 3206 | RSU 09 | 2 | 2,326 | 2,234 | $96 \%$ | 20 |
| 1198 | RSU 80/MSAD 04 | 2 | 543 | 527 | $97 \%$ | 26 |
| 1264 | RSU 72/MSAD 72 | 2 | 1,105 | 1,076 | $97 \%$ | 11 |
| 1225 | RSU 31/MSAD 31 | 2 | 482 | 471 | $98 \%$ | 23 |
| Grand Total | 43,845 | 33,241 | $76 \%$ |  |  |  |
| 174 | RSU 02 in | 24 |  |  |  |  |

Note: RSU 02 includes Richmond, an "isolated town" (not in an LMA)

Table B3. Towns Where LMA30 by Town Differs from LMA by SAU

|  | SAU | Town |  | Town LMA |  | SAU LMA | Enroll |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1197 | RSU 03/MSAD 03 | Troy | 22 | Pittsfield, LMA | 16 | Belfast, LMA | 173 |
| 1198 | RSU 80/MSAD 04 | Wellington | 22 | Pittsfield, LMA | 26 | Dover-Foxcroft, LMA | 16 |
| 1211 | RSU 17/MSAD 17 | Hebron | 13 | Lewiston-Auburn, Metropolitan NECTA | 12 | Bridgton-Paris, LMA | 210 |
| 1225 | RSU 31/MSAD 31 | Maxfield | 27 | Millinocket, LMA | 23 | Bangor, Metropolitan NECTA | 11 |
| 1229 | RSU 35/MSAD 35 | Eliot | 1 | Portsmouth, NH-ME Metropolitan NECTA | 2 | Dover-Durham, NH-ME Metropolitan NECTA | 968 |
| 1234 | RSU 40/MSAD 40 | Friendship | 9 | Waldoboro, LMA | 10 | Rockland-Camden, LMA | 136 |
| 1234 | RSU 40/MSAD 40 | Waldoboro | 9 | Waldoboro, LMA | 10 | Rockland-Camden, LMA | 662 |
| 1235 | RSU 41/MSAD 41 | Lagrange | 23 | Bangor, Metropolitan NECTA | 26 | Dover-Foxcroft, LMA | 113 |
| 1240 | MSAD 46 | Exeter | 23 | Bangor, Metropolitan NECTA | 26 | Dover-Foxcroft, LMA | 142 |
| 1240 | MSAD 46 | Garland | 23 | Bangor, Metropolitan NECTA | 26 | Dover-Foxcroft, LMA | 154 |
| 1247 | RSU 53/MSAD 53 | Burnham | 15 | Waterville, Micropolitan NECTA | 22 | Pittsfield, LMA | 175 |
| 1249 1249 | RSU 55/MSAD 55 RSU 55/MSAD 55 | Baldwin Cornish | 6 | Portland-South Portland, Metropolitan NECTA Portland-South Portland, Metropolitan NECTA | 5 | Acton, LMA Acton, LMA | 186 188 |
| 1251 | RSU 57/MSAD 57 | Alfred | 99 | Isolated Town | 6 | Portland-South Portland, Metropolitan NECTA Portland-South Portland, | 383 |
| 1251 | RSU 57/MSAD 57 | Newfield | 5 | Acton, LMA | 6 | Metropolitan NECTA Portland-South Portland, | 180 |
| 1251 | RSU 57/MSAD 57 | Shapleigh | 4 | Sanford, Micropolitan NECTA | 6 | Metropolitan NECTA | 365 |
| 1254 | RSU 60/MSAD 60 | North Berwick | 3 | Wells, LMA | 2 | Dover-Durham, NH-ME Metropolitan NECTA | 667 |
| 1255 | RSU 61/MSAD 61 | Bridgton | 12 | Bridgton-Paris, LMA | 6 | Portland-South Portland, Metropolitan NECTA | 636 |
| 1261 | RSU 68/MSAD 68 | Charleston | 23 | Bangor, Metropolitan NECTA | 26 | Dover-Foxcroft, LMA | 187 |
| 1264 | RSU 72/MSAD 72 | Stoneham | 12 | Bridgton-Paris, LMA | 11 | Conway, NH- LMA | 29 |
| 1265 | RSU 74/MSAD 74 | New Portland | 20 | Farmington, LMA | 21 | Skowhegan, LMA | 78 |

(Continued) Table B3. Towns Where LMA30 by Town Differs from LMA by SAU

| SAU |  | Town | Town LMA |  | SAU LMA |  | Enroll |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1284 | Airline CSD | Great Pond | 17 | Ellsworth, LMA | 23 | Bangor, Metropolitan NECTA | 4 |
| 3156 | RSU 02 | Dresden | 7 | Brunswick, Micropolitan | 14 | Augusta, Micropolitan | 199 |
|  |  |  |  | NECTA |  | NECTA |  |
|  |  |  |  | Lewiston-Auburn, Metropolitan |  | Augusta, Micropolitan |  |
| 3156 | RSU 02 | Monmouth | 13 | NECTA | 14 | NECTA | 635 |
|  |  |  |  |  |  | Augusta, Micropolitan |  |
| 3156 | RSU 02 | Richmond | 99 | Isolated Town | 14 | NECTA | 474 |
| 3157 | RSU 04 | Litchfield | 99 | Isolated Town | 13 | Lewiston-Auburn, Metropolitan NECTA | 511 |
| 3159 | RSU 10 | Buckfield | 13 | Lewiston-Auburn, Metropolitan | 19 | Rumford, LMA | 293 |
|  |  |  |  | NECTA |  |  |  |
|  |  |  |  | Lewiston-Auburn, Metropolitan |  |  |  |
| 3159 | RSU 10 | Canton | 13 | NECTA | 19 | Rumford, LMA | 122 |
|  |  |  |  | Lewiston-Auburn, Metropolitan |  |  |  |
| 3159 | RSU 10 | Hartford | 13 | NECTA | 19 | Rumford, LMA | 144 |
| 3159 | RSU 10 | Sumner | 12 | Bridgton-Paris, LMA | 19 | Rumford, LMA | 105 |
| 3160 | RSU 12 | Alna | 9 | Waldoboro, LMA Brunswick, Micropolitan NECTA | 14 | Augusta, Micropolitan | 82 |
|  |  |  |  |  |  | NECTA |  |
|  |  |  |  |  |  | Augusta, Micropolitan |  |
| 3160 | RSU 12 | Westport |  |  | 14 | NECTA | 45 |
|  |  |  |  | Waterville, Micropolitan |  | Augusta, Micropolitan |  |
| 3164 | RSU 18 | Oakland | 15 | NECTA | 14 | NECTA | 954 |
| 3165 | RSU 19 | Dixmont | 23 | Bangor, Metropolitan NECTA | 22 | Pittsfield, LMA | 141 |
| 3165 | RSU 19 | Etna | 23 | Bangor, Metropolitan NECTA | 22 | Pittsfield, LMA | 185 |
| 3165 | RSU 19 | Newport | 23 | Bangor, Metropolitan NECTA | 22 | Pittsfield, LMA | 463 |
| 3174 | RSU 39 | Limestone | 98 | missing | 29 | Presque Isle, LMA | 210 |
| 3175 | RSU 67 | Mattawamkeag | 27 | Millinocket, LMA | 24 | Lincoln, LMA | 88 |
| 3184 | RSU 78 | Magalloway Plt | 19 | Rumford, LMA | 20 | Farmington, LMA | 12 |
| 3206 | RSU 09 | Starks | 21 | Skowhegan, LMA | 20 | Farmington, LMA | 92 |
| 3217 | RSU 22 | Frankfort | 17 | Ellsworth, LMA | 23 | Bangor, Metropolitan NECTA | 186 |
| Total | 28 SAUs | 41 towns |  |  |  |  | 10,604 |

## Appendix C: Policy Option Simulation Model Tables

## List of Tables:

Policy Option 1: Remove Regional Adjustment All = 1.00 (Old LMAs)
Policy Option 2A3: No Update Floor $=0.93$ (Old LMAs)
Policy Option 3B: Update Floor $=0.93$ Ceiling $=1.09$ (Old LMAs)
Policy Option 3C: Floor = 0.93; Soft Cap $=1.07$ (Old LMAs)
Policy Option 4B: Floor $=0.93 ; \mathrm{Cap}=1.09$ (Proposed TMAs)
Policy Option 4C: Floor $=0.93$; Soft Cap $=1.07$ (Proposed TMAs)

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| ISO＇I\＄－ | 9ヵて\＄ | 20＊${ }^{-}$ | 20＇I | 00＊I |  |  | L＇LLI | SIMPS qnd yp！Msunig 9z0I |
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| 90 ＇$^{\text {¢ }}$ \＄ | 91\＄－ | $80^{\circ}{ }^{-}$ | 80 ${ }^{\text {I }}$ | 00＊I | VWT puelniod rıero | t | $6^{\circ} \mathrm{Z}$ |  |
| 90 ＇$^{\text {b }}$－ | 26L\＄ | $80^{\circ} 0^{-}$ | 80 ${ }^{\text {I }}$ | 00＊I | VNT pue［ı0 ${ }_{\text {d }}$ | $t$ | $0 \cdot \mathrm{E} \dagger \mathrm{I}$ | IS GVSW／IS＠SY StZI |
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| $90 z^{\prime}+\$^{-}$ | 6て£＇I\＄ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ | $0 \cdot 0 \downarrow$ \％ | 90 GVSW／90 ПSy 00ZI |
| $90 \chi^{\prime}+\$^{-}$ | U19\＄ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ | －01I |  |
| $90 z^{\prime}+\$^{-}$ | 098\＄ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ |  | SIMPS qnd yoorqisa M SLII |
| $90 z^{\prime}+\$^{-}$ | EャI＇I\＄ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ | ＊902 |  |
| 90 ＇$^{\text {b }}$ \＄ | ¢Iて＇IS | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ | が6Iて |  |
| 90 ＇$^{\text {b }}$－ | IIS－ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＇I |  | $t$ | 0 亿 |  |
| $90 z^{\prime}+\$^{-}$ | LL9＇2\＄ | $80^{\circ} 0^{-}$ | $80^{\circ} \mathrm{I}$ | 00＊I |  | $t$ | $\varepsilon \cdot \varepsilon 8 t$ |  |
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| LLS＇I\＄ | 97\＄－ | $\varepsilon 0^{\circ} 0^{-}$ | E0＇I | 00＊I | VWT roqre\％Кеqчıoog 9 |  | $\mathrm{SILO}^{\text {S qn }}$ d oroqPiqon LIII |
| LLS＇IS－ | 2\＄ | $\varepsilon 0^{\circ} 0^{-}$ | E0＇I | 00＇I | VW才 roqre\％Квqч100я 9 | 0＇I |  |
| LLS＇IS－ | 62\＄－ | $\varepsilon 0^{\circ} 0^{-}$ | E0＇I | 00＇I | VW才 roqre\％Кеqчıооя 9 | $8^{\cdot} \varepsilon 1$ | SIMPS qnd IOłS！！g \＆zoI |
| LLS＇IS－ | 66\＄－ | $\varepsilon 0^{\circ} 0^{-}$ | E0＇I | 00＊I | VWT roqre\％Кеqчıооя 9 | ¢＊$\llcorner$ |  |
| LLS＇IS－ | ¢\＄－ | E0 $0^{-}$ | E0＇I | 00＊I | VW才 roqre\％Квqч\％ооя 9 | $9{ }^{\circ} \mathrm{Z}$ |  |
| IS0＇I\＄${ }^{-}$ | 01\＄－ | $20^{\circ} 0^{-}$ | 20＊I | 00＊I | VWT Yヤ！Msun．I－ЧPG ¢ | $0{ }^{\circ}$ |  |
| IS0＇IS－ | 181\＄ | $200^{-}$ | 20＇I | 00＊I |  | 0＇IEI | ПSUXT－I0 ПSt ZSIE |
| IS0＇IS－ | LEZ\＄ | $200^{-}$ | 20＇I | 00＇I |  | 60LI | ¢L GVSW／¢L ПSt 99ZI |
| IS0＇I\＄－ | カ9\＄－ | $20{ }^{-}$ | 20＇I | 00＊I | VNT צכ！Msunıg－чeg ¢ | s．9t |  |
| ләчэед $\mathbf{L}$ <br>  |  | วธบหบว |  <br> ұшә．．．n | $\begin{gathered} 00 \cdot \mathrm{I}=\mathrm{IIV} \\ \text { ұшәшsn!py on } \end{gathered}$ | VN＇T PIO | я．ə甲чэә $\mathbf{L}$ <br> ALI | OVS |


| てIt「8\＄ | ¢6\＄ | 91．0 | 78．0 | 00＊I |  | 9＊8 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| てIt「8\＄ | I0I\＄ | 91．0 | 78．0 | 00＊I | VWT әsp！！qI！－ıodsəuof 9I | I 6 | － |
| てIt「8\＄ | 9と¢\＄ | 91．0 | 78．0 | 00＇I | VWT әธp！！qI！－Hodsəuof 9I | $t \cdot 8 t$ | LE GVSW／LE $\cap$ SU İZI |
| てIt「8\＄ | 0عIS | 91．0 | $78^{\circ} 0$ | 00＇I |  | L＇II |  |
| てIt「8\＄ | $\varepsilon L \$$ | 91．0 | 78．0 | 00＊${ }^{\text {I }}$ |  | $9 \times$ |  |
| †¢I＇${ }^{\text {c }}$ | ZS\＄ | $90^{\circ} 0$ | 76．0 | 00＊I | VWT liodsyong ¢I | －${ }^{\text {® }}$ |  |
| t¢I＇ $\mathrm{t}^{\text {d }}$ | 882\＄ | $90^{\circ} 0$ | 76．0 | 00＇I | VWT Liodsyong ¢ | t．69 | ¢Z ПS 0 OLE |
| 97S\＄ | 94\＄ | ［0 $0^{-}$ | I0＊ | 00＊I | VWT ${ }^{\text {SREJT }}$－$\dagger$ | 0＊01I | IL ПS |
| 97S\＄－ | 9\＄－ | $100^{-}$ | 10． 1 | 00＇I | VWT iseforg ti | $\varepsilon \cdot 6$ |  |
| 97S\＄ | LZ\＄－ | $100^{-}$ | 10． 1 | 00＊I | VWT Isefpeg ti | เ－8E | 0Z $\cap$ St 991E |
| 97S\＄ | 29\＄－ | $100^{-}$ | 10． 1 | 00＇I | VWT ${ }^{\text {Seffrg }} \mathrm{tI}$ | t－68 | £0 TVSW／E0 กSt L6I I |
| 97S\＄ | 6\＄ | $100^{-}$ | 10． 1 | 00＇I | VWT Iseforg ti | L＇ZI | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\text {d oroqsojSI }}$ 6L0I |
| 975\＄ | 01\＄－ | $10^{\circ} 0^{-}$ | 10．1 | 00＇I | VWT $\operatorname{ss}$ | $0 \cdot \varsigma 1$ |  |
| LLS ${ }^{\text {I }}$ \＄ | I0E\＄ | E0\％ | L6．0 | 00＇I |  | 6 切 | 6† CVSW／6† ПSษ EャZI |
| LLS＇I\＄ | ELI\＄ | E0\％ | L6．0 | 00＇${ }^{\text {I }}$ |  | $て ゙ ¢ 8$ | SI¢PS MоIsu！M E8II |
| LLS＇IS | ¢ZZ\＄ | E0\％ | L6．0 | 00＇I |  | ع＇80I |  |
| 6Z9＇2\＄ | $\varepsilon \downarrow$ ¢ | S0．0 | S6．0 | 00＊I | VWT Pısnonn | －${ }^{\text {® }}$ | $0 \varepsilon$ CVSW／0¢ $\cap$ St tzZI |
| 629＇z\＄ | LI\＄ | S0\％ | ¢6．0 | 00＊I | VWT eqsnôn | $8{ }^{\circ}$ |  |
| 629｀\％\＄ | ISES | ¢0 0 | ¢6．0 | 00＇I | VWT eqsnôn | ¢ 10 I | 8\＆กSษ \＆LIE |
| 6z9＇ح\＄ | てZ9\＄ | S0．0 | ¢6．0 | 00＊${ }^{\text {I }}$ | VWT eqsnôn | 8\％6L | 8I $\cap$ St t91E |
| 629｀\％ | ISZ\＄ | ¢0．0 | ¢6．0 | 00＊I | VWT eqsnonn | $\nabla^{\circ} \mathrm{ZL}$ | てI $\cap$ St 091を |
| 629＇2\＄ | 6ES\＄ | ¢0 0 | ¢6．0 | 00＇I | VWT eqsnôn | $8^{\circ} \mathrm{C}$ ¢ 1 | Z0 กS女 9¢IE |
| 629＇2\＄ | 00¢\＄ | S0．0 | ¢6．0 | 00＇I |  | $\varepsilon \cdot \downarrow \square I$ | I I CVSW／II $\cap$ St ¢0ZI |
| 629｀\％ | ¢ZZ\＄ | ¢0．0 | ¢6．0 | 00＇I |  | $6 \cdot$ 9 |  |
| 629＇2\＄ | 60I\＄ | ¢0 0 | ¢6．0 | 00＇I | VWT eqsnonn | ¢＇IE |  |
| 629＇2\＄ | 69t\＄ | S0．0 | ¢6．0 | 00＇I |  | ¢ ¢¢EI |  |
| 629＇2\＄ | St\＄ | S0＇0 | ¢6．0 | 00＇I | VWT eqsnôn ${ }^{\text {a }}$ LI | 6．ZI |  |
| 629²\＄ | 0II\＄ | S0＇0 | S6．0 | 00＊I |  | 8＊IE | CSD प0łธోu！ |
| 629 「 2 \＄ | ZI\＄ | S0．0 | S6．0 | 00＇I | VWT Uołธิu！uols II | $9^{\circ} \varepsilon$ | 9L GVSW L9ZI |
| 629＇2\＄ | てE\＄ | S0．0 | ¢6．0 | 00＇I | VWT Uołธu！ | て．6 |  |
| 629＇2\＄ | 62\＄ | ¢0．0 | ¢6．0 | 00＇I | VWT uotou！ | ¢．8 |  |
| 629＇2\＄ | E\＄ | S0．0 | ¢6．0 | 00＇I | VWT uotolu！uols II | $0 \cdot \mathrm{I}$ |  |
| 629 ${ }^{\text {² }}$ | ちて\＄ | S0．0 | S6．0 | 00＊I | VWT uołธ̧u！uols II | 69 | SIM丁S qn ${ }_{\text {d }}$ ขu！ |
| 629＇2\＄ | 0\＆\＄ | ¢0．0 | ¢6．0 | 00＇I | VWT uołou！ | $9 \cdot 8$ |  |
| ．әүэвд <br>  |  | วธบ้บว | $\begin{gathered} \text { ұиәuцsn!py } \\ \text { ұиә.ın’ } \end{gathered}$ | $\begin{gathered} 00 \cdot \mathrm{I}=\mathrm{IIV} \\ \text { ұиәш!sn!py oN } \end{gathered}$ | VNT PIO |  | nVS |


| 089 ＇$¢ \$$ | t6\＄ | L0 0 | E6\％ | 00＊${ }^{\text {I }}$ | VWT roqreh reg－yriomsili oz | \＆．6I |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 089 ＇$¢ \$$ | t¢\＄ | L0 0 | E6\％ | $00^{\circ} \mathrm{I}$ | VWT roqreh reg－yıomsili 0 0z | て＇II |  |
| 089 ＇$¢ \$$ | 08\＄ | L0 0 | E6\％ | 00＇I | VWT roqreh reg－પromsili oz | ¢．91 | $\mathrm{sIM}^{\text {S }} \mathrm{qn}_{\mathrm{d}}$ Yooour H ILOI |
| 089 ＇$¢ \$$ | 0It\＄ | L0．0 | E6\％ | 00＇I | VWT roqreh reg－yıiomsili 0 0z | L＇t8 |  |
| 089 ＇$¢ \$$ | $\varepsilon$ E／\＄ | L0 0 | E6\％ | $00^{\circ} \mathrm{I}$ | VWT roqreh reg－yıomsili 0 0z | L＇乙 |  |
| 089 ＇ E \＄ | LSIS | L0．0 | E6\％ | 00＇I | VWT roqreh reg－પriomsili oz | $\varepsilon \cdot \tau \varepsilon$ |  |
| tSI＇ES | 992\＄ | $90^{\circ} 0$ | 76\％ | 00＊I |  | 0 － 9 | 9ャ GVSW 0ャZI |
| tSI＇E\＄ | ELS\＄ | $90^{\circ} 0$ | ＋6．0 | 00＊I | VWT prys | 6．LEI | 6I＠St ¢9IE |
| tSI＇$¢$ \＄ | てIZ\＄ | $90^{\circ} 0$ | ＋6．0 | $00^{\circ}$ I |  | I＇IS | £¢ CVSW／\＆¢ กSt L†ZI |
| tSI＇$¢$ \＄ | こて\＄ | $90^{\circ} 0$ | 76．0 | 00＇I | VWT ppys | $\varepsilon \cdot \varsigma$ |  |
| てIナ＇8\＄ | 98I\＄ | 91．0 | $78^{\circ} 0$ | 00＊I |  | 8\％1 | lu！${ }_{\text {d }}^{\text {lueser }}$ Id ZLZI |
| てIt「8\＄ | L6\＄ | 910 | $78^{\circ} 0$ | $00^{\circ} \mathrm{I}$ | VWT Hodıseg－se！¢ | 8.8 | SIMPS qnd Kuəd 6ZII |
| てIt＇8\＄ | ＋6\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT Hodıseg－se！¢ | ¢．8 |  |
| てIt＇8\＄ | 891\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT |  |  |
| てIt＇8\＄ | LZ\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT $\downarrow$ Lodiseg－se！ | カ＇Z |  |
| てIt「8\＄ | 9¢\＄ | 910 | $78^{\circ} 0$ | $00^{\circ} \mathrm{I}$ | VWT Hodiseg－se！¢ | I＇S |  |
| てIt＇8\＄ | £9\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT | $L \cdot S$ |  |
| てIt＇8\＄ | 8EI\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT $\downarrow$ Lodiseg－se！ | $\varsigma^{\circ} \mathrm{ZI}$ |  |
| てIt「8\＄ | 66\＄ | 91．0 | $78^{\circ} 0$ | $00^{\circ} \mathrm{I}$ | VWT Hodıseg－se！ | 6.8 | 6I CVSW／¢8 ПSt \＆IZI |
| てIt＇8\＄ | II\＄ | 91．0 | $\downarrow 8^{\circ} 0$ | 00＇I |  | 0＇I |  |
| てIナ＇8\＄ | 88E\＄ | 91．0 | $78^{\circ} 0$ | 00＊${ }^{\text {I }}$ | VWT れodiseg－se！¢PeN 8I | $0 \cdot \varsigma \mathcal{E}$ |  |
| てIt＇8\＄ | IS\＄ | 91．0 | $78^{\circ} 0$ | 00＇I | VWT Hodiseg－se！¢P¢ | $9{ }^{\circ} \mathrm{t}$ |  |
| IS0＇IS | 102\＄${ }^{-}$ | 20＊${ }^{-}$ | 20＊I | 00＊I | VWT rosfueg LI | $0 \cdot \mathrm{St} \mathrm{I}$ | ZZ กSを LIZE |
| ISO＇IS－ | て\＆I\＄ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWT rosuueg LI | $9 \cdot 66$ | 七\＆กSษ ZLIE |
| IS0＇IS－ | 88\＄－ | 20\％${ }^{-}$ | 20．I | 00＇I | VWT roôueg LI |  | 97 กSy ILIE |
| ISO＇IS－ | \＆Z - | 20\％${ }^{-}$ | 20＇I | 00＇I | VWT roŝueg LI | ¢ 91 |  |
| IS0＇IS－ | tS\＄－ | 20\％${ }^{-}$ | 20＇I | 00＊I | VWT roŝueg LI | 068 | £9 CVSW／¢9 กSt L¢ZI |
| IS0＇IS－ | ¢IS－ | 20\％${ }^{-}$ | 20．I | 00＇I | VNT roŝueg LI | 9．0I |  |
| ISO＇IS－ | LES－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWT roŝueg LI | L．92 |  |
| ISO＇IS－ | IES－ | 20\％${ }^{-}$ | 20＇I | 00＇${ }^{\text {I }}$ | VWT roŝueg LI | でてZ | SIMPS qnd profl！w 90II |
| IS0＇IS－ | ャ0I\＄－ | 20\％${ }^{-}$ | 20＊I | $00^{\circ} \mathrm{I}$ | VNT roŝueg LI | $6.7 L$ | SIMPS qnd uош．əH tL0I |
| ISO＇IS－ | Sカ\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWT roŝueg LI | でて¢ |  |
| ISO＇IS | て\＆I\＄ | 20\％${ }^{-}$ | 20＇I | 00＊${ }^{\text {I }}$ | VWT roŝueg LI | $0 \cdot ¢ 6$ |  |
| ISO＇IS－ | 8てE\＄ | 20＊${ }^{-}$ | 20＊I | 00＊${ }^{\text {I }}$ | VWT roŝueg LI | I L L \％ |  |
| ．әурвәц <br> ．．2d 150つ |  | วธบ้บว | ұ $u$ วuュsn！py <br> †uә．．．n’ | $\begin{gathered} 00 \cdot \mathrm{I}=\mathrm{IIV} \\ \text { ұ иәuцsn!py oN } \end{gathered}$ | VW＇T PIO |  | OVS |


| $60 \varepsilon^{\prime} 9 \$$ | L87\＄ | ZI．0 | $88^{\circ} 0$ | 00＊I | VWT uoł］not 8 \％ | $\bigcirc \cdot \downarrow \mathcal{L}$ | 0L CVSW／0L＠Sy z9zI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 60¢＇9\＄ | ¢99\＄ | てI．0 | $88^{\circ} 0$ | 00＊I | VWT uoł］not 8 \％ | 0.08 | 6 6 CVSW／6Z ПSt \＆zzI |
| $60 \varepsilon^{\prime} 9 \$$ | 882\＄ | てI．0 | $88^{\circ} 0$ | 00＇I |  | L＇$\downarrow \mathcal{E}$ |  |
| $60 \varepsilon^{\prime} 9 \$$ | †L\＄ | てI．0 | $88^{\circ} 0$ | 00＇I | мpou！li！ 7 SEG－p＞pou！II！ | 68 |  |
| $60 \varepsilon^{\prime} 9 \$$ | カャI\＄ | てI．0 | $88^{\circ} 0$ | 00＊I |  | E．LI |  |
| E0I＇Z\＄ | LES | †0．0 | 96.0 | 00＊I | VWT s！e［e］¢Z | $\varsigma^{\prime} \varepsilon I$ | 七I CVSW／ち8 ПSర 80ZI |
| E0I＇て\＄ | 6\＄ | t0 0 | 96.0 | 00＇I | VWT sịle | $\varepsilon^{\cdot} \varepsilon$ | GSว əôuey tseag 88ZI |
| E0I＇て\＄ | てE\＄ | †0．0 | 96.0 | 00＊I | VWT s！̣⿺𠃊 | ナ 1 I | d！̣sumol ue！pui ILZI |
| E0I＇z\＄ | ¢ $¢ \$$ | †0．0 | 96.0 | 00＇I | VNT s！erej cz | $0 \%$ |  |
| E0I‘Z\＄ | 6\＄ | t0 0 | 96.0 | 00＊I | VWT s！̣⿺𠃊 | $\nabla^{*} \varepsilon$ |  |
| E0I＇て\＄ | £6\＄ | †0．0 | 96.0 | 00＇I | VWT s！̣⿺𠃊 | L＇$\varepsilon \varepsilon$ |  |
| E0I＇z\＄ | 69\＄ | †0．0 | 96.0 | 00＇I | VWT s！erej cz | $8 \downarrow$－ |  |
| E0I＇2\＄ | てI\＄ | t0 0 | 96.0 | 00＊I | VW才 s！erej sz | t＇t |  |
| E0I＇Z\＄ | 02\＄ | t0 0 | $96^{\circ}$ | 00＊I | VWT U0ヶธीu！umey tz | $\nabla^{*}$ |  |
| E0I＇て\＄ | 90t\＄ | t0 0 | 96.0 | 00＇I | VWT uо̧ou！ | L＇9tI | 60 กSษ 90Zを |
| E0I＇z\＄ | L6Z\＄ | t0 0 | 96.0 | 00＊I | VWT uоøธบ！ | でLOI | EL ПSt 86IE |
| E0I＇て\＄ | IS\＄ | t0 0 | 96.0 | 00＇I | VWT uofolu！umey tz | ¢ 81 | 8L ПSt t8IE |
| ع0I＇ 2 \＄ | ISIS | t0 0 | 96.0 | 00＊I | VWT uotolu！umy $\dagger$ ¢ |  | 8¢ GVSW／8¢ กSt z¢ZI |
| $09 \varepsilon^{\prime}\llcorner \$$ | E0L\＄ | †I＇0 | $98^{\circ} 0$ | 00＊I | VWT pue［моН－uloou！${ }^{\text {¢ }}$ \＆ | $s^{\circ} \mathrm{ZL}$ | L9 ПSt slie |
| $09 \varepsilon^{\prime} \angle \$$ | 88E\＄ | tI＇0 | $98^{\circ}$ | 00＇I |  | 00t |  |
| 089 ${ }^{\circ} \mathrm{E}$ \＄ | ¢ I\＄ | L0．0 | E6\％ | 00＊I | VWT projunt | $0^{\circ} \mathrm{E}$ |  |
| $089{ }^{\text { }}$ ¢\＄ | 006\＄ | L0 0 | E6＊ | 00＇I | VWT profunt $z 7$ | L＇¢8I | 0I $\cap \mathrm{St}$ 6¢IE |
| 089 ＇ E \＄ | 9LZ\＄ | L0 0 | E6\％ | 00＊I | VWT proyuny zz | 6．95 | カt CVSW／tャ กS |
| E8L＇S\＄ | t9S\＄ | ［［ 0 | $68^{\circ} 0$ | 00＊I | VNT Iosueg rəno IZ | $0{ }^{\circ} \mathrm{L}$ | t9 CVSW／t9 ПSt 8czI |
| E8L＇S\＄ | $9 \downarrow$ ¢ | I ${ }^{\circ} 0$ | $68^{\circ} 0$ | 00＊I | VWT roôueg mono IZ | $\dagger^{\circ} \mathrm{S} \downarrow$ | £Z CVSW／L8 $\cap$ Sy LIZI |
| E8L＇s\＄ | 28\＄ | II＇0 | $68^{\circ}$ | 00＊${ }^{\text {I }}$ | VWT rosurg rəno IZ | 801 |  |
| 089 ${ }^{\text { }}$ \＄ | ¢ I\＄ | L0 0 | E6\％ | 00＊I | VWT roqreh reg－yriomsill 0 O | $0^{\circ} \mathrm{E}$ | CSO 2u！1！${ }^{\text {¢ }}$ t8ZI |
| $089{ }^{\text {＇}}$ \＄ | 6\＆\＄ | L0．0 | E6\％ | 00＇I | VWT roqreh reg－yromsili 0 0z | $0 \cdot 8$ |  |
| $089{ }^{\text { }}$ ¢\＄ | ［9E\＄ | $L 0^{\circ} 0$ | $\varepsilon 6 \%$ | 00＇I | VWT roqreh reg－yriomsili 0 ¢ | $s^{\prime}+L$ | 七て $\cap \mathrm{St}$ 691E |
| 089 ＇ ¢\＄ | 902\＄ | $L 0^{\circ} 0$ | E6\％ | 00＇I | VWT roqreh reg－yriomsili oz | $\varsigma^{\prime}$＇t |  |
| 089 ＇$¢ \$$ | ¢9\＄ | $L 0^{\circ} 0$ | E6\％ | 00＊${ }^{\text {I }}$ | VWT roqreh reg－yhiomsili oz | $\varsigma^{\circ} \mathrm{E}$ I |  |
| $089{ }^{\text {¢ }}$ ¢\＄ | 0L\＄ | L0 0 | E6\％ | 00＇I |  | $\downarrow$－ 1 | SIM $^{\text {S }}$ qn ${ }_{\text {d }}$ |
| 089 ＇ ¢\＄ | ES\＄ | $L 0^{\circ} 0$ | E6\％ | 00＇I | VWT roqreh reg－yriomsili 0 O | 6．01 | $\mathrm{sly}^{\circ} \mathrm{S} \mathrm{qn}_{\mathrm{d}}$ K．uns 6 Cll |
| 089＇ E \＄ | ILS | L0\％ | E6\％ | 00＊I | VNT roqreh reg－yriomsili oz | 9 t |  |
|  <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | อธบ้บว |  | $\begin{gathered} 00 \cdot \mathrm{I}=\mathrm{IIV} \\ \text { ұ иәшцsn!py oN } \end{gathered}$ | VW＇T PIO |  | nVS |


| 97S\＄ | ZI\＄ | 10．0 | $66^{\circ} 0$ | 00＊I | VWT eysemepen se | も ${ }^{\text {a }}$ | £ย TVSW／\＆์ กSt LZZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 97S\＄ | 8E\＄ | 10.0 | $66^{\circ}$ | 00＊ | $\forall$ WT |  |  |
| 92S\＄ | ¢I\＄ | 10．0 | $66^{\circ} 0$ | $00^{\circ}$ I | $\checkmark$ WT uonng ux $\Lambda$ ¢ $\varepsilon$ | でで | 七て CVSW／88 ПSt 8izI |
| LSでS\＄ | EIZ\＄ | 01 0 | $06^{\circ}$ | 00＊ |  | L＇0¢ |  |
| LSで¢\＄ | ¢ย9\＄ | 010 | $06^{\circ}$ | 00＇${ }^{\text {I }}$ |  | L＇I6 | $6 \varepsilon$ กSY ヤLIE |
| L¢で¢\＄ | 6SI\＄ | 010 | 06.0 | 00．${ }^{\text {I }}$ |  | $0 \cdot \varepsilon Z$ | St CVSW／st กSt 6ezI |
| LSでS\＄ | ¢EZ\＄ | 010 | $06^{\circ}$ | 00＊ |  | $0 \cdot \downarrow \mathcal{L}$ | て૪ CVSW／ても กSせ 9\＆ZI |
| LSて＇S\＄ | ItI\＄ | 010 | $06^{\circ}$ | 00．${ }^{\circ}$ |  | $\varepsilon \cdot 0 乙$ | て\＆ $0 V S W / Z \varepsilon$ กSせ 9ZZI |
| L¢で¢\＄ | ¢¢Z\＄ | 010 | 06.0 | $00^{\circ} \mathrm{I}$ |  | $6.9 \varepsilon$ | 0Z CVSW／98 ПSt tIZI |
| LSて＇S\＄ | $0 \varepsilon L \$$ | 010 | 06.0 | $00^{\circ} \mathrm{I}$ |  | $\bigcirc \varsigma^{\circ} \mathrm{O}$ | I0 CVSW／6L กSy 96II |
| LSて＇S\＄ | 8L\＄ | 010 | $06^{\circ}$ | 00．${ }^{\circ}$ |  | $\varepsilon^{\prime} I I$ | SIMPS qnd pueipoom L8I I |
| LSでS\＄ | †¢\＄ | 010 | $06^{\circ}$ | 00＊${ }^{\circ}$ | VWT noqueว－əsi mbbsord $\tau \varepsilon$ | $6{ }^{\circ}$ |  |
| LSでS\＄ | てEI\＄ | 010 | 06.0 | 00＊I | VWT noqụe－－ | $0 \% 1$ |  |
| LSて＇S\＄ | てI\＄ | 01．0 | 06.0 | 00＊I |  | $8 \cdot 1$ |  |
| 629＇z\＄ | 6SI\＄ | S0＇0 | S6．0 | 00＊ | VWT サo．oxos－．əлоС İ | $8^{\circ} \mathrm{St}$ | 89 CVSW／89 ПSt I9ZI |
| 629＇2\＄ | 69I\＄ | ¢0 0 | ¢6．0 | 00＊I |  | $L \cdot 8 t$ | It CVSW／It กSt ¢EZI |
| 629＇2\＄ | 8EI\＄ | ¢0 0 | ¢6．0 | 00＊I |  | $00 \%$ | t0 CVSW／08 ПSt 86I I |
| 629＇2\＄ | 99\＄ | $\mathrm{SO}^{\circ} 0$ | ¢6．0 | 00＊I | VWT ગા！ | $0 \% 1$ | sIMPS qnd |
| LLS ${ }^{\text {T }}{ }^{-}$ | 2Z\＄－ | E0 $0^{-}$ | E0＊I | 00＊I | VWT иебวәчмоэS 6Z | － 01 |  |
| LLS＇I\＄${ }^{-}$ | ¢6\＄ | \＆0\％ $0^{-}$ | E0＇I | 00＊I | VWT иебәәчмоуS 6 亿 | 9＊St | 七L CVSW／tL＠St ¢9ZI |
| LLS＇I\＄ | 201\＄ | E0\％ $0^{-}$ | E0＇I | 00＊I | VWT иعоิวчмоуS 6乙 | 0\％ 6 | 6¢ CVSW／6¢ กSy £¢zI |
| LLS＇I\＄ | 0ヶE\＄ | E0\％ $0^{-}$ | E0＇I | 00＊ | VWT иеоิวчможS 62 | 9＊E9 I |  |
| LLS＇I\＄${ }^{-}$ | てカ\＄－ | \＆0\％ $0^{-}$ | E0＇I | 00＊I | VWT иеоิวчможS 6 亿 | I 0 O | £I TVSW／E8 กSt LozI |
| LLS＇I\＄ | こと\＄－ | \＆ $0^{\circ} 0^{-}$ | E0．I | 00＊I | VWT UセธิวчмоуS 6Z | $\nabla^{*} ¢ 1$ | てI CVSW／Z8 คS ${ }^{\text {d }}$ 90ZI |
| 60ع＇9\＄ | SIt\＄ | ZI＇0 | 88．0 | 00＊I |  | 0．0S | 0¢ ПSy 66IE |
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| － | － | － | ¢6\％ | ¢6．0 | VWT uoŋธu！ | $9 \cdot 8$ |  |
|  <br> ．əみ 1 So |  | วธี้รบว | $\begin{gathered} \text { ұиәuцsn!py } \\ \text { ұшә.ın’ } \end{gathered}$ | $\varepsilon 6^{\circ} 0=.100 I \mathrm{H}$ <br>  | VN＇T PIO |  | nVS |


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| － | － | － | 76.0 | ＋6．0 |  | I＇IS |  |
| － | － | － | 76．0 | 76．0 |  | $\varepsilon^{\circ} \mathrm{S}$ |  |
| てEL＇เ\＄ | S0I\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ | VWT $\downarrow$ Lodiseg－SE！ | 8．91 | 廿u！${ }_{\text {d }}$ |
| てEL＇ャ\＄ | ¢¢\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ | VWT Hodıseg－se！̧̣en 8I | 8.8 |  |
| てEL＇ャ\＄ | ES\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ |  | ¢．8 |  |
| てEL＇t\＄ | ¢6\＄ | $60^{\circ} 0$ | 78 0 | E6\％ |  |  |  |
| てEL＇t\＄ | ¢I\＄ | $60^{\circ} 0$ | 78 0 | $\varepsilon 6.0$ |  | $t \cdot \square$ |  |
| て\＆L＇t\＄ | てE\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ |  | $\mathrm{I}^{\prime} \mathrm{S}$ |  |
| てEL＇t\＄ | 9\＆\＄ | $60^{\circ} 0$ | t8 0 | E6．0 |  | $L \cdot S$ |  |
| てEL＇t\＄ | 8L\＄ | $60^{\circ} 0$ | 78 0 | $\varepsilon 6.0$ |  | $\varsigma^{\prime}$ Z |  |
| て\＆L＇t\＄ | ¢¢\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ | VWT HOd Seg－Se！ | 68 | 6I CVSW／¢8 ПSt \＆IZI |
| てEL＇t\＄ | 9\＄ | $60^{\circ} 0$ | t8 0 | $\varepsilon 6^{\circ} 0$ |  | 0＇I | $\mathrm{SIL}^{\circ} \mathrm{S} \mathrm{qn}_{\mathrm{d}}$ КəISəM ELII |
| て\＆L＇t\＄ | 8IZ\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | $\varepsilon 6.0$ |  | $0 \cdot \varsigma \mathcal{E}$ |  |
| て\＆L＇t\＄ | 62\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ | VWT Hodiseg－se！¢ | $9{ }^{\circ} \dagger$ | $\mathrm{sIL}^{\circ} \mathrm{S}$ qn ${ }_{\text {d }}$ oıoqsəuof $\mathrm{Z80}$ I |
| － | － | － | 20＊I | 20＊I | VWT rosfueg LI | $0 \cdot ¢ \dagger$ I | てZ ПS¢ LIZE |
| － | － | － | 20＊I | 20＇I | VWT roŝueg LI | $9 \cdot ¢ 6$ | ャ\＆$\cap$ Sy ZLIE |
| － | － | － | 20＇I | 20＇I | VWT roŝueg LI | － － | 9 9 0 S ILIE |
| － | － | － | 20＇I | 20＇I | VWT roŝueg LI | ¢．91 |  |
| － | － | － | 20．I | 20．I | VNT roŝueg LI | $0.6 \varepsilon$ | £9 CVSW／E9 ПSt L¢ZI |
| － | － | － | 20＇I | 20＇I | VWT roŝueg LI | 901 |  |
| － | － | － | 20＇I | 20＇I | VWT roŝueg LI | L＇9て |  |
| － | － | － | 20＊I | 20＇I | VWT rosurg LI | でで | SIMPS qnd proyl！${ }^{\text {a }}$ 90II |
| － | － | － | 20＇I | 20＇I | VNT roŝueg LI | $6.7 L$ | SIMPS qnd uошə\％$\dagger$ ¢0I |
| － | － | － | 20＇I | 20＇I | VWT roŝueg LI | でて\＆ | SIMPS qnd unquəŋ £90I |
| － | － | － | 20＊I | 20＇I | VNT roŝueg LI | $0 \cdot ¢ 6$ | SIMəS qnd əəmə．g IZ0I |
| － | － | － | 20＊I | 20＇I | VWT roŝueg LI | I 2 LEZ |  |
| ．әцэва $\mathbf{L}$ <br>  |  | วธบ้บว |  | $\mathcal{E} 6^{\circ} 0=.100 \mid \mathrm{H}$ <br> ұuәuısn！py | VNT PIO | s．ə甲чэәа $\mathbf{L}$ GLI | OVS |


| 679＇z\＄ | 611\＄ | \＄0．0 | 88.0 | $\varepsilon 6.0$ | VWT ưłпnot 82 | $\bigcirc{ }^{\text {c }}$ ¢ | $0 \angle$ avSW／0L nsy z9zI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $679^{\text {² }}$ \＄ | LLZ\＄ | S0．0 | $88^{\circ}$ | $\varepsilon 6.0$ | VWT ưłnner 82 | 0.08 | 6 C GVSW／6z nsy ezzi |
| 679＇z\＄ | 0zIS | S0．0 | 88.0 | $\varepsilon 60$ |  | L＇ı |  |
| 679 ＇z\＄ | IE\＄ | ¢0 0 | $88^{\circ}$ | $\varepsilon 6^{\circ}$ |  | 68 |  |
| 629 ¢\％ | 09\＄ | S0．0 | $88^{\circ}$ | $\varepsilon 6.0$ |  | \＆゙LI |  |
| － | － | － | $96^{\circ}$ | 96.0 | VWT S！ere］sz | ¢＇$\varepsilon 1$ | tI GVSW／t8 ПSy 80ZI |
| － | － | － | $96^{\circ}$ | 96.0 | VWT S！pied sz | $\varepsilon^{\wedge} \varepsilon$ |  |
| － | － | － | $96^{\circ}$ | 96.0 | VWT S！ele | カ・ 1 | d！̧̣sumol uе！pui ILZI |
| － | － | － | $96^{\circ}$ | 96.0 |  | $0 \%$ |  |
| － | － | － | $96^{\circ}$ | 96.0 | VWT S！piej sz | $\dagger^{\bullet} \varepsilon$ |  |
| － | － | － | 96.0 | 96.0 | VWT s！p［p］sz | L｀£ |  |
| － | － | － | 96.0 | 96.0 | VWT s！epro sz | 8 －$\downarrow$ \％ |  |
| － | － | － | $96^{\circ}$ | 96.0 | VWT S！ere 9 ¢ | t＇t |  |
| － | － | － | 960 | 96.0 | VWT uolsu！umey tz | $\downarrow$ |  |
| － | － | － | $96^{\circ}$ | 96.0 |  | L＇9tI | 60 กSy 902\＆ |
| － | － | － | $96^{\circ}$ | 96.0 |  | でLOI | EL nsy 86IE |
| － | － | － | $96^{\circ}$ | 96.0 |  | ¢ 81 | 8L nSy 781 E |
| － | － | － | $96^{\circ}$ | 96.0 |  | $t \cdot \mathrm{~s}$ | 8S GVSW／8S กSy zczl |
| 089｀¢\＄ | ISE\＄ | L0．0 | $98^{\circ}$ | \＆6．0 |  | S＇zL | L9 ПSy ¢ $<1 \varepsilon$ |
| 089＇¢\＄ | t6I\＄ | L0．0 | $98^{\circ}$ | $\varepsilon 6.0$ |  | 00t | İ $\mathrm{GVSW} / \mathrm{I}$ ¢ $\cap \mathrm{Sy} \mathrm{¢zzI}$ |
| － | － | － | E60 | E6．0 | VWT piojuny $z Z$ | $0^{\circ} \mathrm{E}$ |  |
| － | － | － | E60 | \＆6\％ | VWT projuny $z z$ | L＇¢81 | 0I คSy 6SIE |
| － | － | － | E6\％ | E6．0 | VWT projung zz | 6.95 | tt OVSW／tt nSy 8 8zI |
| £01＇z\＄ | ¢0z\＄ | t0 0 | $68^{\circ}$ | \＆6．0 | VWT Iosutg dopno IZ | ${ }^{\circ} \downarrow\llcorner$ | t9 GVSW／t9 กSy 8¢ZI |
| ع01＇z\＄ | 92I\＄ | t0 0 | $68^{\circ}$ | £6\％ | VWT rosurg rıpno Iz | － $\mathrm{St}^{\text {t }}$ | £z GVSW／L8 ПSy LIZI |
| ع01＇z\＄ | 0¢\＄ | t0 0 | $68^{\circ}$ | \＆6\％ | VWT Iosiuxg rotno Iz | 801 |  |
| － | － | － | $\varepsilon^{6} 0$ | E6．0 | VWT ${ }^{\text {roqueh }}$ reg－Yriomsili 02 | $0^{\circ} \mathrm{E}$ |  |
| － | － | － | E60 | \＆6．0 | VW才 roqreh reg－yromsili $0 z$ | 08 |  |
| － | － | － | E60 | $\varepsilon 6^{\circ}$ | VW才 roqrey reg－yromsili $0 z$ | s＇tL | 七て กSy 691E |
| － | － | － | E60 | $\varepsilon 6^{\circ} 0$ | VW才 roqreh reg－чıомs | $\varsigma{ }^{\text {c }} \downarrow$ | aSo |
| － | － | － | E60 | $\varepsilon 6.0$ | VW才 roqrey reg－yromsili $0 z$ | $\varsigma{ }^{\text {c }}$ ¢ |  |
| － | － | － | E60 | $\varepsilon 6.0$ | VW才 roqrey reg－yromsili $0 z$ | カ・リ |  |
| － | － | － | E60 | $\varepsilon 6.0$ | VWT roqreh reg－yromsili $0 z$ | 601 |  |
| － | － | － | E6．0 | $\varepsilon 6.0$ | VWT roqreh reg－yriomsila $0 z$ | $9+1$ |  |
| ．әчэюш <br> ．ad isoo | （ s 000 ＇$\$$ ） <br>  | әธิччบ | ниәшиsn！py <br>  | $\mathcal{E} 6 \% 0=.100 \mid \mathrm{H}$ ұนәuцsn！py | VNT PIO | s．əурвәы <br> GLI | nvs |


| － | － | － | $66^{\circ} 0$ | $66^{\circ} 0$ | VWT eysemepen $¢$ ¢ | カ゚レI | ££ CVSW／££ กSU LZZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| － | － | － | $66^{\circ} 0$ | $66^{\circ}$ |  | L＇tS | LZ GVSW IZZI |
| － | － | － | $66^{\circ} 0$ | $66^{\circ} 0$ | VWT uəing ux $\Lambda$ ¢ | でで |  |
| LLS ${ }^{\text {a }}$ \＄ | t9\＄ | E0＊0 | 06\％ | E6\％ |  | L0E | $\mathrm{SIM}^{\text {S }} \mathrm{Tn}_{\text {d }}$ eysemepen L60I |
| LLS＇IS | 06I\＄ | E0\％ | $06^{\circ} 0$ | E6\％ |  | L＇I6 | $6 \varepsilon$ กSY ヤLIE |
| LLS＇I\＄ | 8t\＄ | $\varepsilon 0^{\circ} 0$ | $06^{\circ} 0$ | E6\％ |  | $0 \cdot \varepsilon \tau$ | Sャ CVSW／Sヤ กSt 6\＆ZI |
| LLS＇I\＄ | ILS | E0．0 | $06^{\circ} 0$ | E6\％ |  | $0 \cdot \downarrow \mathcal{L}$ | てャ TVSW／て† กSt 9\＆ZI |
| LLS＇IS | で\＄ | E0\％ | $06^{\circ} 0$ | $\varepsilon 6.0$ |  | $\varepsilon \cdot 0 乙$ | て\＆ OVSW／Z\＆กSt 9てZI |
| LLS＇I\＄ | LL\＄ | E0\％ | $06^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ |  | $6 \cdot 9 \varepsilon$ | 0Z GVSW／98 ПSy tIZI |
| LLS＇IS | 6IZ\＄ | E0．0 | 06.0 | E6\％ |  | $\bigcirc \cdot ¢ 01$ | I0 CVSW／6L＠Sy 96II |
| LLS＇IS | £ Z\＄ | E0\％ | $06^{\circ} 0$ | E6．0 |  | $\varepsilon \cdot I I$ | $\mathrm{SILO}^{\text {S qnd pueppoom L8II }}$ |
| LLS＇I\＄ | 01\＄ | E0\％ | $06^{\circ} 0$ | E6\％ |  | $6{ }^{\circ}$ |  |
| LLS＇I\＄ | 6E\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | $0 \cdot 61$ |  |
| LLS＇IS | †\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | 8.1 |  |
| － | － | － | ${ }^{6} 6^{\circ}$ | ¢6\％ | VWT サo．oxot－．ənod IE | $8^{\circ} \mathrm{S}$ ¢ | 89 CVSW／89 ПSt I9ZI |
| － | － | － | ¢6\％ | ¢6．0 |  | $L \cdot 8 t$ | It CVSW／It＠Sy sezI |
| － | － | － | ¢6\％ | ¢6．0 |  | 0.0 t | t0 CVSW／08 ПSt 86II |
| － | － | － | ¢6．0 | ¢6．0 |  | $0 \cdot 61$ |  |
| － | － | － | E0＇I | E0＇I |  | t＇0I | SIMJs qnd surulv Ieze |
| － | － | － | E0＇I | E0＇I | VNT UعถิวчмоуS 6Z | $9^{\circ} \mathrm{St}$ | 七L TVSW／tL ПSv ¢9ZI |
| － | － | － | E0＇I | E0＇I | VNT पебәчмоуS 6Z | $06 t$ | 6¢ GVSW／6¢ กSt \＆czI |
| － | － | － | E0＇I | E0＇I | VNT иебิәчмоуS 6Z | 9＊E9I | t¢ $\mathrm{GVSW} / \downarrow ¢$ ПSt $8 \pm$ I |
| － | － | － | E0＇I | E0＇I | VWT u®อัวчмоуS 6Z | I＇0て | £I $\mathrm{GVSW} / \mathrm{E} 8$ กSせ LOZI |
| － | － | － | \＆0＇I | E0＇I | VWT पебәчмоуS 6Z | $\nabla^{\circ} \mathrm{S}$ I | ZI GVSW／Z8 กSせ 90ZI |
| 679＇2\＄ | ELI\＄ | S0．0 | $88^{\circ} 0$ | E6\％ |  | 0．0S | 0S ПSt 66IE |
| ．әчэъ $\mathbf{L}$ <br> ．əд $\mathfrak{1}$ soว |  | วธี้รЧว | ұนәயцsn！py <br>  | $\mathcal{E} 6^{\circ} 0=.100 I \mathrm{H}$ <br> ұ $u$ ひuısn！py | VN＇T PIO | $\begin{gathered} \text { S.ə чэеәL } \\ \text { HLA } \end{gathered}$ | nVS |


| 97S\＄ | L\＄ | 10．0 | 20＊I | E0＇I |  | 9．0I |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 97S\＄ | 9\＄ | 10.0 | 20＊I | E0＇I |  | S．8 |  |
| 97S\＄ | EZI\＄ | 10.0 | 20＊I | E0＇I |  | L＇LLI | SIMPS qnd yo！msunig 9z0I |
| 97S\＄ | StI\＄ | 10．0 | 80＊I | 60＇I |  | ¢．60Z | 七I ПSを Z9IE |
| 97S\＄ | 96\＄ | 10.0 | 80＇I | $60^{\circ}$ I |  | 9881 | ¢0 ПSt 8¢LE |
| 97S\＄ | 2\＄ | 10.0 | 80＇I | $60^{\circ}$ I |  | 67 |  |
| 97S\＄ | 66\＄ | 10.0 | 80＇I | 60＇I | VWT рие！上о | $0 \cdot ๕ \dagger \mathrm{I}$ | IS UVSW／IS $\cap$ St ¢tZI |
| 97S\＄ | E6\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ |  | I＇t¢ | ¢ I GVSW／¢I＠Sy 60ZI |
| 97S\＄ | 991\＄ | 10.0 | 80＇I | 60＇I |  | $0 \cdot 0\rangle$ \％ | 90 UVSW／90 ПSt 00ZI |
| 97S\＄ | 9L\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ | VWT рие！上о | toll |  |
| 97S\＄ | LOI\＄ | 10.0 | 80＇I | 60＇I |  | で¢¢I |  |
| 97S\＄ | EtI\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ |  | t．90て |  |
| 97S\＄ | ZSI\＄ | 10.0 | 80＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ |  | －61Z |  |
| 97S\＄ | I\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | $60^{\circ}$ I |  | 0 － |  |
| 97S\＄ | SEE\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ |  | £ E8t |  |
| 97S\＄ | 8II\＄ | 10.0 | 80＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ |  | で0LI | SIMPS qnd шeчroŋ ¢90I |
| 97S\＄ | ZII\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ |  | L＇I9I | SIMPS qnd ¢ınowiry L¢0I |
| 975\＄ | I8\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ |  | 9＊91I |  |
| 97S\＄${ }^{-}$ | tt\＄－ | $10^{\circ} 0^{-}$ | $60^{\circ}$ I | 80＊I | VWT рıоуəрр！¢ ع | 0 ¢9 | £Z กSt 89IE |
| 92S\＄ | L0I\＄－ | $100^{-}$ | 60＇I | 80＇${ }^{\text {I }}$ | VWT pıoэрр！${ }^{\text {¢ }}$ | でも¢ 1 | IZ $\cap$ St L9IE |
| 97S\＄ | 88\＄－ | $100^{-}$ | 60＇I | 80＇${ }^{\text {I }}$ | VWT рıоэəр！${ }^{\text {¢ }}$ | c．LZI |  |
| 92S\＄ | L\＄ | $10.0{ }^{-}$ | 60＊I | $80^{\circ} \mathrm{I}$ | VWT proэəpp！g \＆ | L．0I |  |
| 97S\＄ | 七IIS | $100^{-}$ | 60＇I | 80＇${ }^{\text {I }}$ | VWT рıоэəр！${ }^{\text {¢ }}$ | 0．¢91 | SI¢PS qnd projəpp！g 9i0I |
| 92s\＄ | 0L\＄－ | $10^{\circ} 0^{-}$ | 60＊${ }^{\circ}$ | $80^{\circ} \mathrm{I}$ | VWT pıoэрр！${ }^{\text {¢ }}$ | L．00I | GSD |
| E0I＇z\＄＇ | ZIS\＄ | 70 $0^{-}$ | E0＇I | $66^{\circ}$ | VWT projues 2 | 8.781 | LS GVSW／LS ПSV ISZI |
| E0I＇＇z\＄ | Lも\＄ | ¢0 $0^{-}$ | E0＇I | $66^{\circ}$ | VWT proyues $て$ | 0．LI |  |
| E0I＇z\＄－ | IES\＄－ | ＋0 $0^{-}$ | E0＇I | $66^{\circ}$ | VNT projues $\downarrow$ | 9＇16I | sipos qnd projues 8tll |
| E0I＇ 2 \＄－ | ELS\＄ | t0 $0^{-}$ | E0＊I | $66^{\circ} 0$ | VWT projues 2 | 6.902 | 09 OVSW／09 ПSt t¢̧I |
| LLS ${ }^{6}$ \＄ | 91E\＄ | E0\％ | 90＊I | $60^{\circ} \mathrm{I}$ |  | I＇ZSI | ¢E GVSW／¢E ПSt 6ZZI |
| LLS＇I\＄ | 682\＄ | E0\％ | 90＇I | $60^{\circ} \mathrm{I}$ | VWT y | 0．6EI |  |
| LLS＇I\＄ | L9I\＄ | E0\％ | 90＊I | $60^{\circ} \mathrm{I}$ |  | て．08 |  |
| 069＇I\＄ | E0L＇0ヶI＇6\＄－ |  |  |  |  | で01ナ「¢ |  |
| ELS＇I\＄ | tLL＇s0L＇8\＄ |  |  |  |  | $0{ }^{\circ} \mathrm{SES}$ ¢ ${ }^{\text {c }}$ |  |
| 9E\＄${ }^{-}$ | $626{ }^{\circ}+\varepsilon \pm \$^{-}$ | $100{ }^{\circ}{ }^{-}$ | I00 ${ }^{\text {I }}$ | I00＊I |  | S＇ISI＇ZI | دU！P官 |
| ләцэва $\mathbf{L}$ <br>  |  | วธีบทบว | ұиәшцsn！py ұиә．．．＂$>$ | 60․ 07 E6＊0 ұuәu！sn！py | VN＇T PIO |  | OVS |


| ISO＇IS＇ | ［IS－ | $200^{-}$ | ¢60 | E60 |  | で8 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ISO＇IS＇ | LES－ | $200^{-}$ | ¢60 | E60 | VW7 uołouụols II | 8.97 |  |
| ISO＇IS－ | 2\＄－ | 20．0－ | ¢6．0 | E60 | VWT uołoụuols it | I＇I |  |
| ع01＇zs | 9＋\＄ | t0 0 | $00^{\circ} \mathrm{I}$ | ＋0．${ }^{\text {I }}$ | VWT pueppoy 6 | 9＇91 |  |
| ع01＇z\＄ | 8LE\＄ | to 0 | $00^{\circ} \mathrm{I}$ | t0 I | VWT Pupppoy 6 | ナ9¢1 | £I กSy 1918 |
| ع01＇z\＄ | stis | to 0 | $00 \cdot 1$ | t0 ${ }^{\text {I }}$ | VWT pueppoy 6 | て＇zs |  |
| £01＇z\＄ | ES | to 0 | $00 \cdot 1$ | ＋0．${ }^{\text {I }}$ | VWT pueproy 6 | 0＇I | ¢9 dVSN／¢9 กSy 6̧zI |
| £01＇z\＄ | て¢¢\＄ | t0 0 | $00 \cdot 1$ | ＋0．${ }^{\text {I }}$ | VWT puepyoy 6 | 0＇LZI | 0t dVSW／0t nsy tezl |
| E01＇z\＄ | ZSI\＄ | t0 0 | $00 \cdot$ I | t0＇I | VWT pueppoy 6 | 0＇s¢ | $8 Z$ GVSN／8Z กSy zzZI |
| £01＇z\＄ | ¢¢\＄ | t0 0 | $00 \cdot 1$ | ＋0． 1 | VWT pueproy 6 | 8.61 | 80 dVSW／80 nsy zozl |
| E01＇z\＄ | 0¢\＄ | t0 0 | $00 \cdot$ I | t0＇I | VWT pueppoy 6 | 8.01 | L0 GVSN／L0 กSy IozI |
| £01＇z\＄ | 68\＄ | t0 0 | $00 \cdot$ I | ＋0．${ }^{\text {I }}$ | VWT pueppoy 6 | I＇tI |  |
| col＇z\＄ | ¢¢\＄ | t0 0 | 00 I | ＋0． 1 | VWT Pueryooy 6 | ¢＇zI |  |
| 92S\＄${ }^{-}$ | 08\＄${ }^{-}$ | $10^{\circ} 0^{-}$ | $86^{\circ} 0$ | L6\％ | VWT uminqu－uols！${ }^{\text {a }}$（ 7 | †¢ SII | 91 กSy £9IE |
| 92S\＄－ | ¢9\＄－ | $100^{-}$ | $86^{\circ}$ | L60 | VWT unquv－uols！Mə 8 | 9 － 6 | t0 กSy LSIE |
| 97S\＄${ }^{-}$ | ＋6\＄ | $100^{-}$ | $86^{\circ} 0$ | L60 | VWT unqnv－uols！${ }^{\text {a }}$（ 8 | 0＇981 | ZS GVSW／ZS กSy 9tてI |
| 97S\＄ | IS\＄－ | $100^{-}$ | $86^{\circ} 0$ | L60 | VWT unqnv－uols！Mə 8 | でヤん |  |
| 92S\＄－ | 6EZ\＄－ | $100^{-}$ | $86^{\circ} 0$ | L60 | VWT unquv－uols！Mə 8 | 8 8＇tを |  |
| 97S\＄－ | t915－ | 10\％${ }^{-}$ | $86^{\circ} 0$ | L6．0 | VWT unquv－uols！Mə 8 | S＇LEZ |  |
| 97S\＄${ }^{-}$ | ¢¢ $\$^{-}$ | ${ }^{10} 0^{-}$ | ${ }^{6} 0$ | E60 | VNT Stry－Kemion 0l | £＇£ $¢$ | LI GVSN／LI＠Sy IIZI |
| 92S\＄ | 6E\＄${ }^{-}$ | $10^{\circ} 0^{-}$ | เ60 | E60 | VWT－y® 0 osrqas $L$ | 6．ss |  |
| 92S\＄ | 16\＄${ }^{-}$ | $10^{\circ} 0^{-}$ | เ60 | E60 |  | 80¢1 | I9 GVSW／I9 กSy sczi |
| 92S\＄${ }^{-}$ | $6 \mathrm{t} \$^{-}$ | $100{ }^{-}$ | ＋6．0 | E6\％ |  | て＇IL | ¢¢ GVSW／s¢ $\cap$ Sy 6tてI |
| tSI＇ES | 2ZI\＄ | $90^{\circ}$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWT Ioqreh Keqqloog 9 | £＇6z | GSD Keg fies lepy 06ZI |
| tsI＇$¢ \$$ | 92\＄ | 90.0 | E0＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ |  | て＇9 |  |
| tsI＇$¢ \$$ | 2S\＄ | 90.0 | E0＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ |  | t ${ }^{\text {¢ }}$ |  |
| tSI＇$¢ \$$ | t\＄ | $90^{\circ}$ | E0＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ |  | 0＇I |  |
| tsI＇$¢ \$$ | LS\＄ | $90^{\circ}$ | E0＇${ }^{\text {I }}$ | $60^{\circ} \mathrm{I}$ | VWT ．oqreh кеqчıооя 9 | $8 \cdot \varepsilon$ | sI¢TS qnd lorsug ezol |
| tSI＇$¢ \$$ | L6I\＄ | $90^{\circ}$ | £0＇ I | $60^{\circ} \mathrm{I}$ |  | $\varsigma^{\circ} \mathrm{L}$ |  |
| tSI＇$¢$ \＄ | II\＄ | $90^{\circ}$ | E0＇ 1 | $60^{\circ} \mathrm{I}$ | VWT Jоqıен кеqчюоод 9 |  |  |
| 97S\＄ | S\＄ | 100 | 20＇I | E0＇ 1 | VWT Ypinsunig－qleg s | $0 \cdot \mathrm{~L}$ |  |
| 92S\＄ | $16 \$$ | 100 | 20＇ 1 | E0＇ 1 | VWT yopmsunig－qreg s | $0^{*}$ IEI | กSyyt－I0 กSy zSIE |
| 97S\＄ | 811\＄ | 10.0 | 20 I | E0＇I | VWT Pinsunig－yreg s | 602I | ¢L GVSW／SL nsy 99ZI |
| 92S\＄ | 2¢\＄ | 10.0 | $20 \cdot 1$ | E0＇I | VWT Yoinsunig－ypeg s | ¢．9t |  |
| лучэәа <br> ．ad 1500 |  | วธินуบ |  <br>  | $60^{\circ}$ I 07 E6．0 ฉนәшиsn！py | VNT PIO | s．ачрвә L <br> GLI | nVS |


| てعL＇ャ\＄ | tS\＄ | $60 \%$ | 78．0 | E6＊ |  | 9＊8 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| てEL＇t\＄ | LS\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6\％ | VWT əôpuqi！－ıodsəuof 9I | ［ 6 | GSว วəq巴soow Z6ZI |
| てEL＇t\＄ | て0ع\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6．0 | VWT əöp！！qI！－ıodsəuo¢ 9I | $t \cdot 8 t$ | LE GVSW／LE ПSt İZI |
| てEL＇カ\＄ | $\varepsilon \angle \$$ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6．0 | VWT əoิp！！qI！－ıodsəuof 9I | L＇II |  |
| てとL＇カ\＄ | Lt\＄ | $60^{\circ} 0$ | 78．0 | E6\％ | VWT əospuqi！－ıodsəuof 9I | $9{ }^{\circ} 9$ |  |
| 92¢\＄ | 6\＄ | 10＇0－ | 76．0 | E6＊ | VWT Hodsyong ¢I | －${ }^{\text {²I }}$ |  |
| 97S\＄ | 8t\＄－ | 10\％${ }^{-}$ | 76．0 | E6．0 | VWT Hodsyong ¢I | － 69 | ¢Z $\cap$ Sy 0LIE |
| £0I＇z\＄＇ | ¢0E\＄ | ＋0 $0^{-}$ | I0＊I | L6．0 | VWT ${ }^{\text {Sefflog }}$－I | 0001I | IL ПSを ItてE |
| \＆0I＇z\＄－ | 97\＄－ | ＋0 $0^{-}$ | ［0．I | L6．0 | VWT ${ }^{\text {Seffeg }}$ ¢I | $\varepsilon 6$ |  |
| E0I＇ 2 ¢－ | 901\＄－ | ＋0：0－ | L0．I | L6．0 | VWT ${ }^{\text {Sefpeg }} \mathrm{t}$ | $\nabla^{*} 8 \varepsilon$ | 0Z $\cap$ St 99IE |
| E0I＇z\＄－ | $8 \downarrow$ \％ | ＋0．0－ | ［0．I | L6．0 | VWT ${ }^{\text {Seffeg }}$ ¢I | カ68 | £0 TVSW／E0 ПSt L6I I |
| E0I＇z\＄－ | ¢ES－ | 50 $0^{-}$ | 10．I | L6．0 | VWT ${ }^{\text {seffeg }}$ ¢I | L＇ZI |  |
| \＆0I＇z\＄＇ | てt\＄－ | ＋0\％${ }^{-}$ | 10．I | L6．0 | VWT ${ }^{\text {Sefpg }}$ ¢I | 0＊SI |  |
| E0I＇Z\＄－ | I0t\＄－ | ＋0 $0^{-}$ | L6．0 | E6＊ |  | 6 切 | 6† CVSW／6† ПSt \＆ |
| E0I＇${ }^{\text {¢ }}$－ | 0عZ\＄－ | t0 $0^{-}$ | L6．0 | E6．0 |  | でも8 | SIMPS MoIsu！M E8LI |
| \＆0I＇z\＄－ | 00\＆\＄ | ＋0 $0^{-}$ | L6．0 | E6．0 |  | £ 801 |  |
| IS0＇I \＄${ }^{-}$ | LIS－ | 20＊${ }^{-}$ | ¢6．0 | E6＊ |  | ナ てI | $0 \varepsilon$ CVSW／0¢ ПSt tZZI |
| ISO＇IS－ | L\＄ | 20＊${ }^{-}$ | ¢6．0 | E6．0 |  | $8{ }^{\circ}$ |  |
| ISO＇IS＇ | ItI\＄ | 20＊${ }^{-}$ | ¢6．0 | E6．0 |  | ¢ 10 I | $8 \varepsilon$ กSy $\mathcal{L L I E}$ |
| ISO＇IS－ | 6ヵて\＄ | 20＊${ }^{-}$ | ¢6．0 | E6\％ | VWT Pısnôn ${ }^{\text {VI }}$ | 8．6LI | 8I กSt t9IE |
| ISO＇IS－ | 001\＄ | 20\％${ }^{-}$ | ¢6．0 | E6．0 | VWT Pısnonn ${ }^{\text {di }}$ | $\dagger^{\circ} \mathrm{ZL}$ | てI กSy 09Iを |
| ISO＇IS＇ | 912\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 |  | 8 ¢¢ | て0 กSy 9¢IE |
| ISO＇IS－ | 002\＄ | 20＊${ }^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT Płsnôny ZI | $\varepsilon \cdot \downarrow \downarrow$ I | I I GVSW／II $\cap$ St ¢0ZI |
| ISO＇IS－ | 06\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 | VWT Pısnonn ${ }^{\text {cil }}$ | $6 \cdot \downarrow 9$ |  |
| ISO＇IS＇ | tt\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 |  | $\varsigma^{\prime} I \varepsilon$ |  |
| ISO＇IS＇ | 881\＄ | 20＊${ }^{-}$ | ¢6．0 | E6\％ | VWT Pısnôn ${ }^{\text {VI }}$ | ¢．¢¢1 |  |
| ISO＇IS－ | 81\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6\％ | VWT Pısnôn ${ }^{\text {VI }}$ | 6.71 |  |
| IS0＇IS ${ }^{\text {c }}$ | tt\＄－ | 20＇0－ | S6．0 | E6＊ | VWT UOłôu！ | 8＊1E |  |
| IS0＇IS＇ | ¢\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 | VWT uolou！ | $9^{\circ} \mathrm{E}$ | 9L OVSN L9ZI |
| ISO＇IS＇ | EIS－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 | VWT uolobu！uots II | で6 |  |
| ISO＇IS－ | ZIS－ | 20\％${ }^{-}$ | ¢6．0 | E6．0 | VWT uolou！ | $¢^{\circ} 8$ |  |
| ISO＇IS | I\＄－ | 20＊${ }^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT uołธu！ | 0＇I |  |
| IS0＇IS－ | 01\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 | VWT uolou！ | 69 |  |
| IS0＇IS－ | てI\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6．0 | VWT uołธu！ | $9 \cdot 8$ |  |
| ．әуэъд <br>  |  | จธิบหบว | ұ $u$ әuцsn！py <br>  | 60․ 07 E6．0 ұ $u$ ひuısn！py | VW＇T PIO |  | nVS |


| － | － | － | $\mathcal{E} 6^{\circ} 0$ | E6＊ | VWT IoqIeH reg－Ч̧IOMSIİG 0乙 | $\varepsilon \cdot 6 I$ |  |
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| － | － | － | $\varepsilon 6^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ | VWT roqxeН reg－ЧŋIOMSIİ 0 － | て＇II |  |
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| － | － | － | E6\％ | \＆6．0 | VWT roqreh reg－ЧıIOMsIIG 0Z | \＆＇てを | SIMS qnd roqxeh reg てI0I |
| 97S\＄ | ヤ七\＄ | I0\％ | $\rightarrow 6.0$ | S6．0 |  | 0＊ャ9 | 9t CVSW 0ヤてI |
| 9てS\＄ | ¢6\＄ | 10\％ | 76.0 | S6．0 |  | $6{ }^{\circ} \mathrm{LE}$ I | 6I คS $991 \varepsilon$ |
| 9てS\＄ | SES | 10．0 | 76.0 | S6．0 |  | I＇IS |  |
| 9てS\＄ | カ\＄ | $10^{\circ} 0$ | 76.0 | ¢6．0 |  | $\varepsilon \cdot S$ | sIЧフS qnd Kиош．上Н \＆L0I |
| ことL＇t\＄ | S0I\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6＊ | VWT Hodiseg－Se！̣つeW 8I | 8．91 | lu！d lueseeld ZLZI |
| てEL＇ャ\＄ | SS\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | \＆6．0 |  | 8.8 |  |
| て\＆L＇カ\＄ | ES\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6．0 | VWT 孔Iodiseg－se！̣oew 8I | ¢ 8 |  |
| てEL＇カ\＄ | ¢6\＄ | 60.0 | $78^{\circ} 0$ | \＆6．0 | VWT liodiseg－seıurew 8 I | $て ゙ \subseteq I$ |  |
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| て\＆L＇ャ\＄ | 9\＆\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6．0 | VWT $\downarrow$ Iodiseg－se！̣ソeW 8I | $L \cdot S$ |  |
| てعL＇ャ\＄ | 8L\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | E6．0 | VWT Hodiseg－seı̣フeW 8I | S．ZI | SIMJS qnd se！甲oew isez 6てIE |
| てEL＇カ\＄ | SS\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | \＆6．0 | VWT Hodiseg－se！̣ృeW 8I | 6.8 | 6I CVSW／¢8 คS \＆IZI |
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| ләчэвәц <br> ләd $\mathbf{\imath s o}$ |  | ขถบヒप | ұ $u$ әuцsn！py <br>  |  | VN＇T PIO |  HLH | ПVS |


| 629｀\％\＄ | 61I\＄ | S0．0 | $88^{\circ} 0$ | $\varepsilon 6.0$ | VWT иоұnot 82 | ¢＇tを | 0L OVSN／0L nsy z9zI |
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| 629＇z\＄ | LLZ\＄ | S0．0 | $88^{\circ}$ | $\varepsilon 6.0$ | VWT uоұnot 82 | $0 \cdot 08$ | 6z dVSW／6z กSy \＆zzI |
| 629「て\＄ | 0ZI\＄ | S0．0 | $88^{\circ}$ | \＆ 6.0 |  | L＇ャを |  |
| 629 ＇\％\＄ | IE\＄ | ¢0．0 | 88.0 | $\varepsilon 6.0$ |  | 6.8 | $\mathrm{siquS}_{\text {qn }}^{\text {d }}$ Kempan soll |
| 629 ¢\％ | 09\＄ | ¢0\％ | 88.0 | $\varepsilon 6.0$ |  | £＇LI |  |
| LLS＇IS ${ }^{\text {－}}$ | 82\％${ }^{-}$ | E0＇0－ | 96.0 | E6．0 | VWT S！ele | ¢＇$\varepsilon$ | †I GVSN／t8 กSy 80ZI |
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| LLS＇IS | tて\＄ | E0 $0^{-}$ | 96.0 | E6\％ | VWT S！ele | $\dagger^{+} \mathrm{I}$ | d！̣sumol ur！pui ILZI |
| LLS＇IS | 6 IS $^{-}$ | £0 $0^{-}$ | 960 | \＆6\％ | VWT S！ele | $0 \%$ |  |
| LLS＇IS | L\＄ | E0 $0^{-}$ | 96.0 | E6\％ | VWT S！piej sz | $\dagger^{\bullet} \varepsilon$ |  |
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| LLS＇IS | 2S\＄ | \＆0 $0^{-}$ | 96.0 | E6 0 | VWT s！epe s s | 8 －tz |  |
| LLS＇IS－ | $6 \$^{-}$ | E0 $0^{-}$ | 96.0 | E6．0 | VWT S！pied sz | t＇t |  |
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| LLS＇IS－ | 8\＆\＄－ | E0 $0^{-}$ | 96.0 | E6．0 |  | ¢．81 | 8L $\operatorname{\text {OSy}}$＋8IE |
| LLS＇IS－ | عıl\＄${ }^{-}$ | E0 $0^{-}$ | 96.0 | E6．0 |  | t＇ts | 8¢ GVSW／8S กSy zszl |
| 089｀¢\＄ | ISES | L0＇0 | 98.0 | E6．0 |  | s＇zL | L9 ПSy ¢LIE |
| 089｀¢\＄ | 16I\＄ | $\angle 0^{\circ} 0$ | 98.0 | E6．0 | VWT рие［мон－иоои！¢ ¢ | 0．0t | İ $\operatorname{aVSW/I\varepsilon }$ คSy szzI |
| 97S\＄ | 2\＄ | 100 | E6 0 | ${ }^{+6} 0$ | VWT projuny zz | $0^{\circ} \mathrm{E}$ |  |
| 92S\＄ | 62I\＄ | 100 | E6\％ | ＋6．0 | VWT projuny zz | L＇¢81 | 0I OSy 6SIE |
| 97S\＄ | 6¢\＄ | 10.0 | E6．0 | ＋6．0 | VWT projuny $z 7$ | 6.95 | tt GVSW／tt nSy 8eza |
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| ع01＇z\＄ | 92I\＄ | t0 0 | 68.0 | E6\％ | VWT Iosiueg ronno iz | t－¢t | £z GVSW／L8 ПSy LIZI |
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| － | － | － | E6．0 | $\varepsilon 6.0$ | VWT roqreh reg－yromsili $0 z$ | s＇tL | 七て 1 Sy 691E |
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| － | － | － | E6\％ | $\varepsilon 6.0$ | VW才 roqreh reg－بromsili $0 z$ | $\varsigma^{\circ} \mathrm{E}$ |  |
| － | － | － | E60 | $\varepsilon 6.0$ | VW才 roqreh reg－yromsili $0 z$ | t $\dagger 1$ |  |
| － | － | － | E6．0 | $\varepsilon 6.0$ | VWT roqreh reg－yromsili $0 z$ | 6．01 |  |
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| лучэәд <br> ．red 1soj |  | әธัичบ |  »ш．．．nด | $\mathbf{6 0}^{\circ} \mathrm{I} 0+\mathrm{E}_{6}{ }^{\circ}$ <br>  | VNT PIO | s．əәчэвә $\mathbf{L}$ <br> GLA | nVS |


| E0I＇Z\＄＇ | 8t\＄${ }^{-}$ | ¢0 $0^{-}$ | $66^{\circ} 0$ | ¢6 0 | VWT eysemepen se | も゚ LI | £ย TVSW／E£ กSర LZZI |  |  |  |  |  |
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| ع0I＇て\＄ | ISIS | ¢0 $0^{-}$ | $66^{\circ} 0$ | ¢6．0 | VWT $\downarrow$ Шә＞ | L＇tS | LZ $\$ VSW IZZI  \hline ع0I＇ 2 \＄ & 19\＄－ & ¢0 $0^{-}$ | $66^{\circ} 0$ | ¢6．0 | VWT uang ue $\Lambda$ ¢ | でてZ | 七て GVSW／88 กSt 8IZI |
| LLS＇I\＄ | t9\＄ | E0＇0 | $06^{\circ}$ | E6＊ |  | L＇0E | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\text {d }}{ }^{\text {eysemepeW }}$ L60I |  |  |  |  |  |
| LLS＇IS | 06I\＄ | E0\％ | $06^{\circ}$ | E6．0 |  | L＇I6 | $6 \varepsilon$ OSt tLIE |  |  |  |  |  |
| LLS＇I\＄ | $8 \pm \$$ | E0\％ | $06^{\circ}$ | E6\％ |  | $0 \cdot \varepsilon Z$ | ¢t CVSW／¢ャ กSt 6\＆zI |  |  |  |  |  |
| LLS＇I\＄ | IL\＄ | E0\％ | 06.0 | E6．0 |  | 0 －$\downarrow$ |  |  |  |  |  |  |
| LLS＇I\＄ | ても\＄ | E0\％ | 06.0 | $\varepsilon 6^{\circ} 0$ |  | $\varepsilon \cdot 0 乙$ | て\＆TVSW／て\＆กSy 9てZI |  |  |  |  |  |
| LLS＇I\＄ | LL\＄ | E0\％ | 06.0 | E6\％ |  | $6 \cdot 9 \varepsilon$ | 0 OVSW／98 กSy tIZI |  |  |  |  |  |
| LLS＇I\＄ | 6IZ\＄ | E0．0 | 06.0 | E6．0 |  | $\varsigma^{\circ} \mathrm{C} 0 \mathrm{I}$ | I0 CVSW／6L กSy 96II |  |  |  |  |  |
| LLS＇I\＄ | £ Z\＄ | E0\％ | 06.0 | $\varepsilon 6^{\circ} 0$ |  | $\varepsilon \cdot 1$ | SIMos qnd pueipoom L8II |  |  |  |  |  |
| LLS＇I\＄ | 01\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | $6{ }^{\circ}$ |  |  |  |  |  |  |
| LLS＇I\＄ | 6E\＄ | E0＇0 | 06.0 | E6．0 |  | $0 \cdot 6 \mathrm{I}$ |  |  |  |  |  |  |
| LLS＇IS | カ\＄ | E0\％ | 06.0 | $\varepsilon 6^{\circ} 0$ |  | 8.1 |  |  |  |  |  |  |
| IS0＇I\＄ | E9\＄－ | 20 $0^{-}$ | S6．0 | E6＊ |  | $8{ }^{\circ} \mathrm{S}$ | 89 CVSW／89 กS女 I9ZI |  |  |  |  |  |
| IS0＇I\＄ | L9\＄－ | 20＊ $0^{-}$ | ¢6．0 | $\varepsilon 6.0$ |  | $L \cdot 8 t$ | It CVSW／It กSt ¢EZI |  |  |  |  |  |
| IS0＇I\＄ | ¢¢\＄－ | 20\％${ }^{-}$ | ¢6．0 | E6．0 |  | $00 t$ | t0 CVSW／08 ПSt 86II |  |  |  |  |  |
| LS0＇I\＄ | 97\＄－ | $20{ }^{\circ}$ | ¢6．0 | $\varepsilon 6.0$ |  | 0\％ 1 |  |  |  |  |  |  |
| 089 ${ }^{\circ}$ § $^{-}$ | 0¢\＄ | $10^{\circ} 0^{-}$ | E0＇I | 96.0 | VWT и区бәчмоэS 6Z | t＊0 |  |  |  |  |  |  |
| 089 ＇$\$^{\text {S }}$ | IZZ\＄ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 | VWT uعठิәчмоуS 6Z | 9＊St | 七L CVSW／tL $\cap$ St ¢9ZI |  |  |  |  |  |
| 089 ＇ $\mathrm{S}^{\text {－}}$ | LEZ\＄ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 |  | 0\％ 6 | 6¢ CVSW／6¢ กSt E¢ZI |  |  |  |  |  |
| 089 ＇$¢$ \＄ | \＆6L\＄ | L0 $0^{-}$ | E0＇I | 96.0 | VWT u®oิวчмоуS 6Z | 9＊¢9I | $\downarrow$ ¢ CVSW／$\dagger$ ¢ ПS |  |  |  |  |  |
| 089 ＇$\$^{\text {S }}$ | L6\＄－ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 |  | ［02 | £I CVSW／E8 กSt LozI |  |  |  |  |  |
| 089＇E\＄ | ¢ L \＄ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 | VWT UعถิวчмоуS 6Z | $t \cdot 5$ | てI CVSW／Z8 คS女 902I |  |  |  |  |  |
| 6Z9＇2\＄ | ELI\＄ | S0\％ | $88^{\circ} 0$ | E6\％ |  | 0.0 S | 0¢ ПS ${ }^{\text {c }}$ 66IE |  |  |  |  |  |
| ．әүэвд <br>  |  | จธีนยบว | $\begin{gathered} \text { ұиәuцsn!py } \\ \text { ұиә...n刀? } \end{gathered}$ | 60․ I $0+\mathcal{E} 6^{\circ} 0$ ұuәuиsn！py | VN＇T PIO | $\begin{gathered} \text { S.ләцръ } \mathbf{L} \\ \text { GLI } \end{gathered}$ | nVS |  |  |  |  |  |


| 97S\＄ | 9\＄ | I0\％ | 20＇I | E0＇I | VNT צoimsunig－чleg | $\bigcirc$ | $\mathrm{S}^{\circ} 8$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 97S\＄ | EZI\＄ | 10.0 | 20＇I | E0＇I | VWT צִ！msunig－ч⿺𠃊 | $\bigcirc$ | L＇LLI | SIMPS qnd yotmsunig 9z0I |
| 97S\＄ | StI\＄ | 10\％ | 80＊ | 60＊ |  | t | ¢．60Z | †I ПSt z9IE |
| 97S\＄ | 96\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ |  | t | 9＊8EI | ¢0 ПSt 8¢IE |
| 97S\＄ | 2\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ | VNT рие！上о ${ }_{\text {d }}$ | t | $6{ }^{\circ}$ |  |
| 97S\＄ | 66\＄ | 10．0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ |  | $t$ | $0 \cdot \varepsilon \downarrow \mathrm{I}$ | IS GVSW／IS $\cap$ SY StZI |
| 97S\＄ | £6\＄ | 10．0 | $80^{\circ} \mathrm{I}$ | 60＇I |  | t | I＇teI | ¢I GVSW／¢I＠Sy 60ZI |
| 97S\＄ | 991\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | 60＇I |  | t | $0 \cdot 0 \downarrow$ \％ | 90 GVSW／90 กSy 00ZI |
| 97S\＄ | 9L\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ | VWT рие！ıо ${ }_{\text {d }}$ | $t$ | －01I | SIYS ¢ |
| 97S\＄ | LOI\＄ | 10．0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ |  | t | で¢¢I |  |
| 97S\＄ | \＆ゅI\＄ | 10.0 | 80＇I | $60^{\circ} \mathrm{I}$ |  | t | － 90 － |  |
| 97S\＄ | ZSI\＄ | 10.0 | $80^{\circ} \mathrm{I}$ | $60^{\circ} \mathrm{I}$ | VWT рие！ıо ${ }_{\text {d }}$ | $t$ | －61て |  |
| 97S\＄ | I\＄ | 10．0 | $80^{\circ} \mathrm{I}$ | 60＇I |  | t | 0 亿 |  |
| 97S\＄ | ¢EE\＄ | 10．0 | 80＇I | 60＇I |  | $t$ | $\varepsilon \cdot \varepsilon 8 t$ | $\mathrm{SIM}^{\text {S }}$ qnd purpuod tell |
| 97S\＄ | 8II\＄ | 10．0 | 80＇I | $60^{\circ} \mathrm{I}$ | VNT рие［10 ${ }_{\text {d }}$ | $t$ | で0LI |  |
| 97S\＄ | ZII\＄ | 10．0 | 80＇I | 60＇I | VWT puelıiod rıerø | $t$ | L＇I9I | SI¢จS qn ¢ $_{\text {¢ }}$ |
| 97S\＄ | 18\＄ | 10\％ | $80^{\circ}$ I | $60^{\circ} \mathrm{I}$ |  | t | 9＊91I |  |
| 97¢\＄ | t七\＄ | $10^{\circ} 0^{-}$ | $60^{\circ}$ I | 80＊ | VWT р．оэəр！！ | $\varepsilon$ | $0 \cdot \downarrow 9$ | EZ $\cap$ St 89IE |
| 92S\＄－ | L0I\＄ | $100^{-}$ | $60^{\circ} \mathrm{I}$ | 80＇I | VWT рıојәрр！я | $\varepsilon$ | $て ゙ \downarrow ¢ 1$ | IZ ПSy L9IE |
| 97S\＄－ | 88\＄－ | $100^{-}$ | 60＇I | 80＇I | VWT proэəpp！g | $\varepsilon$ | ¢ $\angle Z I$ | $\mathrm{sly}^{\text {S }}$ qnd ${ }^{\text {ooes }}$ 9tII |
| 97S\＄ | L\＄ | $100^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ | VWT рıоэрр！я | $\varepsilon$ | L．0I | SIMPS qnd uolkeg tt0I |
| 92S\＄－ | 七IIS－ | $100^{-}$ | 60＇I | $80^{\circ} \mathrm{I}$ | VWT proృəpp！g | $\varepsilon$ | 0．99I |  |
| 92S\＄－ | 0L\＄ | $10^{\circ} 0^{-}$ | $60^{\circ}$ I | 80＇I | VWT pıoəpp！g | $\varepsilon$ | L．00I | GSว＋！⿺𠃊 |
| E01＇z\＄－ | ZIS\＄ | ＋0 $0^{-}$ | E0＇I | $66^{\circ}$ | VWT profues | Z | 8.781 | LS CVSW／LS ПSY ISZI |
| E01＇z\＄－ | Lt\＄ | ＋0．0－ | E0＇I | $66^{\circ}$ | VWT projues | て | $0 \cdot \mathrm{~L}$ |  |
| E0I＇＇2\＄－ | IES\＄ | ＋0．0－ | E0＇I | 66.0 | VWT projues | 乙 | 9＇16I |  |
| E0I＇z\＄－ | ELS\＄ | ＋0 $0^{-}$ | E0＇I | 66.0 | VWT proyues | 乙 | 6.902 | 09 dVSW／09 กSy tçI |
| tSI＇ES | てE9\＄ | $90^{\circ}$ | 90＊ | てI＇I | VWT \＃⿺辶－Kınly | I | I＇ZSI | ¢E GVSW／GE กSU 6ZZI |
| 七¢I＇E\＄ | LLS\＄ | 90.0 | 90＇I | てI＇I | VWT y⿺𠃊－Kıən！ | 1 | 0．6EI | SIMPS qnd y |
| 七¢I＇$¢ \$$ | £ยદ\＄ | 90.0 | 90＇I | てI＇I | VWT yox－Кıə ！ | I | て．08 |  |
| $069^{\text {I }}$ \＄ | と0L＇0ヶI＇6\＄－ |  |  |  |  |  | て＇0It＊s |  |
| てIL＇I\＄ | \＆L6＇9Lt＇6\＄ |  |  |  |  |  | $0{ }^{\circ}$ ¢SS＇ऽ |  |
| 82\＄ | 0Lで9を䕡 | $000 \%$ | I00＇I | I00＇I |  |  | S＇ISI＇ZI | әu！¢ए |
|  <br>  |  | วธีบหบว |  |  | VN＇T PIO |  | s．әрреәа <br> GLI | OVS |


| LS0＇IS－ | 2\＄－ | 20．0－ | ¢6．0 | $\varepsilon 6.0$ | VWT uołôu！uols II | I＇I |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| E0I＇Z\＄ | $9 \downarrow \$$ | t0 0 | 00＊I | †0＇I | VWT puerrooy 6 | 9＊9I |  |
| \＆0I＇z\＄ | 8LE\＄ | t0 0 | 00＇I | t0 ${ }^{\text {I }}$ | VWT purprooy 6 | カ゚9を1 |  |
| と0I＇z\＄ | StI\＄ | t0 0 | 00＇I | t0 ${ }^{\circ}$ | VWT pueryooy 6 | でて¢ |  |
| E0I＇て\＄ | E\＄ | t0 0 | 00＇I | t0＇I | VWT purproy 6 | $0 \cdot \mathrm{I}$ | ¢9 CVSW／¢9 กSt 6¢ZI |
| ع0I＇z\＄ | ZSE\＄ | t0 0 | 00＇I | t0 ${ }^{\circ}$ | VWT puerpooy 6 | $0 \cdot L Z I$ | 0t CVSW／0t กS $\downarrow$ ¢ |
| E0I＇て\＄ | ZSI\＄ | t0 0 | 00＇I | t0＇I | VWT purprooy 6 | $0 \cdot \varsigma \varsigma$ | 8て CVSW／8Z กSt zzZI |
| E0I＇て\＄ | ¢¢\＄ | t0 0 | 00＇I | t0＇I | VWT purprooy 6 | 8.61 | 80 CVSW／80 กSy zozI |
| ع0I＇z\＄ | 0E\＄ | t0 0 | 00＇I | t0 ${ }^{\circ}$ | VWT pue［yooy 6 | 80 I | L0 TVSW／L0 ПSy I0ZI |
| E0I＇て\＄ | 6\＆\＄ | t0 0 | 00＇I | t0 ${ }^{\circ}$ | VWT pur［yooy 6 | I＇tI | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\text {d }}$ ədoH LLOI |
| E0I＇て\＄ | ¢¢\＄ | t0．0 | 00＇I | t0 ${ }^{\text {I }}$ | VWT purppoy 6 | s＇ZI |  |
| 97s\＄－ | 08\＄－ | $10^{\circ} 0^{-}$ | $86^{\circ} 0$ | L6．0 | VWT umqn－uols！mə 8 | ＊＊SII | 9I ПSt \＆9IE |
| 97S\＄－ | ¢9\＄－ | $100^{-}$ | $86^{\circ} 0$ | L6．0 | VWT unqunv－uols！mə 8 | $9 \cdot 76$ | †0 ПS女 L¢IE |
| 97S\＄ | t6\＄－ | $100^{-}$ | $86^{\circ} 0$ | L6．0 | VWT unqunv－uołs！mə 8 | $0 \cdot 9 \varepsilon 1$ | ZS CVSW／ZS กSt 9tzI |
| 92S\＄－ | IS\＄ | $100^{-}$ | $86^{\circ} 0$ | L6．0 | VWT unqunv－uołs！nว 8 | $て ゙ \downarrow L$ |  |
| 97S\＄ | 6EZ\＄ | $100^{-}$ | $86^{\circ} 0$ | L6．0 | VWT unqunv－uołs！mə 8 | $8{ }^{\circ} \downarrow \downarrow$ ¢ | $\mathrm{SIM}^{\text {S }}$ qnd UOヱS！MəT 880I |
| 92S\＄ | t91\＄－ | 10\％${ }^{-}$ | $86^{\circ}$ | L6．0 | VNT unqun－uols！nว 8 | $\bigcirc \cdot L \varepsilon Z$ | SIMPS qnd unqnv L00I |
| 97s\＄－ | SSI\＄－ | $10^{\circ} 0^{-}$ | t6．0 | E6\％ | VWT Str d－Kbmion 0I | どとZZ | LI CVSW／LI $\cap$ St IIZI |
| 92S\＄ | 6E\＄－ | $10^{\circ} 0^{-}$ | t6．0 | E6\％ | VWT כyeT oşeqas L | $6{ }^{\circ} \varsigma$ | てL CVSW／ZL กSy t9zI |
| 92S\＄－ | 16\＄－ | $100^{-}$ | t6 0 | E6．0 | VNT วyeT oŝeqว | 80¢1 | 19 dVSW／I9 กSt ¢czI |
| 92S\＄－ | 6t\＄ | $10^{\circ} 0^{-}$ | t6．0 | E6\％ |  | て＇IL | sc CVSW／sc กSt 6tzI |
| †¢I＇ES | ZZI\＄ | $90^{\circ} 0$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWT Ioqreh кеqЧ100¢ 9 | £＇62 | CSP Keg lie |
| 七¢I＇E\＄ | 92\＄ | $90^{\circ}$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWT Ioqreh Кеqч100g 9 | $て ゙ 9$ |  |
| 七¢I＇ES | ZS\＄ | $90^{\circ} 0$ | E0＇I | 60＇I |  | ガてI |  |
| 七¢I＇E\＄ | t\＄ | $90^{\circ} 0$ | E0＇I | 60＇I | VWT Ioqreh Кеqч100g 9 | 0＇I | də |
| 七¢I＇E\＄ | LS\＄ | $90^{\circ}$ | E0＇I | 60＇I |  | $8 \cdot \varepsilon I$ |  |
| ャ¢I＇ES | L6I\＄ | $90^{\circ}$ | E0＇I | $60^{\circ} \mathrm{I}$ | VW才 roqreh Квqчюооя 9 | $\varsigma^{\circ} \mathrm{L}$ ¢ | GSว ıqН Квячюооя－Кеqчюооя I8ZI |
| t¢I＇E\＄ | II\＄ | $90^{\circ} 0$ | E0＇I | $60^{\circ} \mathrm{I}$ | VW才 roqreh Квqчюооя 9 | $9{ }^{\prime} 7$ |  |
| 97S\＄ | S\＄ | 10.0 | 20＊I | E0＇I | VWT Yo！msunıg－YıPg s | $0{ }^{\circ} \mathrm{L}$ |  |
| 97S\＄ | I6\＄ | 10．0 | 20＊I | E0＇I | VWT yo！msunig－чl⿺𠃑 ¢ | 0＇IEI | ПS¢サT－I0 ПSy Z¢IE |
| 97S\＄ | 81I\＄ | 10．0 | 20＇I | E0＇I | VWT youmsunig－чeg s | 6．0LI | ¢ $\angle$ dVSW／¢L ПSt 99ZI |
| 97S\＄ | てE\＄ | 10．0 | 20＇I | E0＇I | VW才 youmsunig－чfeg s | c．9t |  |
| 97S\＄ | L\＄ | 10．0 | 20＇I | E0＇I | VWT yoimsunig－Чleg ¢ | 901 |  |
| ．дуэхә $\mathbf{L}$ <br>  |  | วธบนบว |  |  | VN＇T PIO | s．əчреә $\mathbf{L}$ GLI | nVS |


| てEL＇t\＄ | $\varepsilon L \$$ | $60^{\circ} 0$ | t8 ${ }^{\circ}$ | $\varepsilon 6^{\circ} 0$ | VWT əôpuqu！${ }_{\text {－}}$－Hodsəuof 9I | L＇II |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| てEL＇t\＄ | It\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ |  | $9 \cdot 9$ |  |
| 92¢\＄ | 6\＄ | $10^{\circ} 0^{-}$ | 76.0 | E6．0 | VWT Hodsyong ¢I | t＇ZI |  |
| 97S\＄ | $8 \downarrow$ \＄ | $10{ }^{\circ}$ | ＋6．0 | $\varepsilon 6.0$ | VWT fiodsyong ¢I | －69 | ¢Z ПSy 0LIE |
| ع0I＇z\＄＇ | S0E\＄${ }^{-}$ | ＋0 $0^{-}$ | I0．${ }^{\text {a }}$ | L6．0 |  | 0001I | IL＠St ItてE |
| \＆0I＇z\＄－ | 92\＄－ | ＋0．0－ | L0．I | L6．0 | VWT ${ }^{\text {Seffeg }}$ ¢I | $\varepsilon 6$ |  |
| ع0I＇z\＄－ | 901\＄ | ＋0．0－ | L0．${ }^{\text {I }}$ | L6．0 | VWT ${ }^{\text {Seffeg }}$ ¢I | －88 | $0 Z$ ПSy 99IE |
| ع0I＇＇z\＄－ | $8 \pm$ \％${ }^{-}$ | ＋0．0－ | L0．I | L6．0 | VWT $\ddagger$ Sefpg ti | カ68 | £0 TVSW／E0 กSy L6II |
| E0I＇z\＄－ | ¢ES－ | ＋0．0－ | 10．I | L6．0 | VWT ${ }^{\text {Seffeg }}$ ¢I | L＇ZI | SIMPS qn ${ }_{\text {d oroqsojsi }}$ 6L0I |
| ع0I＇z\＄－ | で\＄ | ＋0．0－ | I0．${ }^{\text {I }}$ | L6．0 | VWT $\ddagger$ Sefpg ti | 0 ¢ 1 |  |
| ع0I＇z\＄＇ | I0t\＄${ }^{-}$ | ＋0 $0^{-}$ | L6\％ | E6\％ |  | 6 ＊カI | 6t CVSW／6t $\cap$ St EャZI |
| \＆0I＇z\＄－ | 0とZ\＄ | ＋0．0－ | L6．0 | $\varepsilon 6.0$ |  | $て ゙ ๕ 8$ | SI¢フS Mojsu！M E8II |
| E0I＇z\＄－ | 00\＆\＄ | ＋0．0－ | L6．0 | E6\％ |  | ع＇80I |  |
| IS0 ${ }^{\text {I }}$－ | LIS | $20^{\circ} 0^{-}$ | ¢6\％ | £6\％ | VWT PıSnonn | カでて | $0 \varepsilon$ CVSW／0¢ กSర tzZI |
| ISO＇IS－ | L\＄ | $200^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWT Płsnôn ${ }^{\text {VI }}$ | $8{ }^{\circ}$ |  |
| ISO＇IS－ | ItI\＄ | 20．0－ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWT Eqsnônv ZI | ¢ 10 I | $8 \varepsilon$ กSy ELIE |
| ISO＇IS－ | $6 \pm$ \％ | 20．0－ | ¢6．0 | E6．0 | VWT Płsnôny ZI | 8．6LI | 8I $\cap$ St t91E |
| ISO＇IS－ | $001 \$$ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT Płsnôn | $\nabla^{*}$ てL | てI＠St 09IE |
| ISO＇IS－ | 912\＄ | 20．0－ | ¢6．0 | $\varepsilon 6.0$ | VWT Eqsnônv ZI | 8．¢¢I | Z0 กSy 9¢IE |
| ISO＇IS－ | 002\＄ | 20．0－ | ¢6．0 | E6．0 | VWT Płsnôny ZI | $\varepsilon \bullet \downarrow \downarrow$ I | II CVSW／II $\cap$ St ¢0ZI |
| ISO＇IS－ | 06\＄ | 20．0－ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWT Eqsnônv ZI | 6.79 |  |
| ISO＇IS－ | tt ${ }^{-}$ | $200^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT Eqsnônv ZI | $\varsigma^{\prime} 1 \varepsilon$ |  |
| ISO＇IS－ | 881\＄ | $200^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ |  | $\varsigma \cdot \varsigma \mathcal{L}$ | SlyS qnd elsnônv 800I |
| IS0＇IS－ | 81\＄－ | $20{ }^{\circ}$ | ¢6．0 | $\mathcal{E} \cdot 0$ | VWT Elsnôn | 6 ZI |  |
| IS0 ${ }^{\text {I }}$－ | to \＄ | 20＊ $0^{-}$ | S6．0 | E6\％ | VWT Uołofu！uols II | 8＊IE |  |
| ISO＇IS－ | ¢\＄ | 20．0－ | ¢6\％ | E6\％ | VWT uołธิu！uots II | $9^{\circ} \mathrm{E}$ | 9L OVSN L9ZI |
| ISO＇IS－ | EIS | 20．0－ | ¢6．0 | $\varepsilon 6.0$ | VWT uołouu！ | で6 | $\mathrm{SILOS}^{\text {qn }}$ d Yọmôpes 0 OSII |
| ISO＇IS－ | てIS | $200^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT uołobu！uots II | ¢．8 |  |
| IS0＇IS－ | I\＄ | $200^{-}$ | ¢6．0 | £6．0 | VNT U0¢ธิu！ | 0＇I |  |
| ISO＇IS－ | 01\＄－ | 20．0－ | ¢6．0 | $\varepsilon 6.0$ | VWT uołoิu！uots II | 6.9 |  |
| ISO＇IS－ | ZIS | $200^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWT uołobu！uots II | $9 \cdot 8$ |  |
| ISO＇IS－ | IIS | 20．0－ | ¢6\％ | E6．0 | VWT uołobu！ | で8 | sIMPS qnd u！pyoorg tz0I |
| ISO＇IS－ | LES－ | 20．0－ | ¢6．0 | E6．0 | VWT uoøธu！ | 8.97 |  |
| ．Јүэвәц <br>  |  | วธิบห पว | $\begin{gathered} \text { ұuәuısn!py } \\ \text { ұиә...n’ } \end{gathered}$ | $\begin{gathered} \text { deว ¥os } \angle 0^{\circ} \mathrm{I} \\ \text { 上ooIf E6.0 } \\ \text { ұuәusn!py } \end{gathered}$ | VN＇T PIO |  GLI | OVS |


| － | － | － | E6＊ | E6．0 | VWT roqre\％reg－чıomsila oz | L＇Z |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| － | － | － | E6\％ | E6\％ | VW才 roqre\％reg－чıomsilg oz | £ て¢ |  |
| 97S\＄ | tt\＄ | I0．0 | 76．0 | ¢6．0 | VWT ploysty！d－．əəxว 61 | 0＊ャ9 | 9ャ TVSW 0ヵZI |
| 97S\＄ | ¢6\＄ | 10.0 | ＋6．0 | ¢6．0 |  | 6．LEI | 6I ПSy ¢9IE |
| 97S\＄ | ¢¢\＄ | 10．0 | t6 0 | ¢6．0 |  | I＇IS | £¢ CVSW／\＆¢ ПSt LoZI |
| 9ZS\＄ | t\＄ | 10.0 | ＋6．0 | ¢6．0 | VWT ppysit！d－．．əəxวવ 6I | $\varepsilon \cdot S$ |  |
| てEL＇t\＄ | ¢0I\＄ | 60.0 | $78^{\circ}$ | E6\％ |  | 8．91 | lu！od lueserald ZLZI |
| てとL＇t\＄ | ¢¢\＄ | $60^{\circ} 0$ | 78．0 | E6．0 | VWT れodıseg－Se！ | 8.8 |  |
| てEL＇t\＄ | ES\＄ | $60^{\circ}$ | $78^{\circ}$ | E6．0 |  | $\bigcirc \cdot 8$ |  |
| てعL＇t\＄ | ¢6\＄ | $60^{\circ} 0$ | $78^{\circ}$ | $\varepsilon 6.0$ | VWT れodıseg－Se！¢ |  |  |
| てEL＇t\＄ | ¢I\＄ | $60^{\circ} 0$ | $78^{\circ}$ | E6．0 | VWT $\downarrow$ Hod ${ }^{\text {Seg－Se！}}$－ | ガて |  |
| てEL＇t\＄ | て\＆\＄ | $60^{\circ} 0$ | t8 0 | $\varepsilon 6^{\circ}$ |  | $\mathrm{I}^{\circ} \mathrm{S}$ |  |
| てعL＇t\＄ | 9\＆\＄ | 60.0 | $78^{\circ}$ | $\varepsilon 6.0$ | VWT れodıseg－Se！¢ | $L \cdot S$ |  |
| て£L＇t\＄ | 8L\＄ | $60^{\circ} 0$ | t8 0 | £6\％ |  | $\mathrm{s}^{\prime} \mathrm{Z}$ |  |
| てEL＇t\＄ | ¢¢\＄ | $60^{\circ}$ | $78^{\circ}$ | E6．0 | VWT $\downarrow$ Lod ${ }^{\text {Seg－Se！}}$－ | 6.8 | 6I CVSW／¢8 ПSt \＆IZI |
| てعL＇t\＄ | 9\＄ | 60.0 | $78^{\circ}$ | $\varepsilon 6.0$ |  | $0 \cdot 1$ | $\mathrm{SIL}^{\circ} \mathrm{S} \mathrm{qn}_{\mathrm{d}}$ КəISəM ELII |
| て£L＇t\＄ | 8IZ\＄ | 60.0 | t8 0 | £6\％ |  | $0 \cdot \varsigma \varepsilon$ |  |
| てEL＇t\＄ | 62\＄ | $60^{\circ} 0$ | 78．0 | E6．0 |  | $9{ }^{\circ} \mathrm{t}$ | $\mathrm{SIL}^{3} \mathrm{~S}$ qn ${ }_{\text {d }}$ oroqs2uof $\mathrm{Z80}$ I |
| － | － | － | 20＊I | て0＊ | VWT Josfueg LI | $0 \cdot \mathrm{CbI}$ | ZZ ПSU LIZE |
| － | － | － | 20＊I | 20＇I | VWT roŝurg LI | 9｀¢6 | 七\＆$\cap$ Sy ZLIE |
| － | － | － | 20＇I | 20＇I | VWT rosiueg LI | t＇$¢ 9$ | 9 9S¢ ILIE |
| － | － | － | 20＇I | 20＇I | VWT rosiueg LI | ¢ 9 I |  |
| － | － | － | 20＇I | 20＇I | VWT rosiueg LI | $06 \varepsilon$ | £9 aVSW／\＆9 กSษ L¢ZI |
| － | － | － | 20＇I | 20＇I | VWT rosfueg LI | 901 | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\text {d }}$ ə！zeว $\$ L9II  \hline － & － & － & 20＇I & 20＇I & VWT rosiueg LI & L＇9て &   \hline － & － & － & 20＇I & 20＇I & VWT rosiueg LI & でで & SIMPS qnd proyl！${ }^{\text {a }}$ 90II |
| － | － | － | 20＇I | 20＇I | VWT rosfueg LI | 6＊し | SIMPS qnd uошır tL0I |
| － | － | － | 20＇I | 20＇I | VWT rosiueg LI | でて\＆ | SIMPS qnd unquəŋ \＆90I |
| － | － | － | 20＇I | 20＇I | VWT rosfueg LI | $0 \cdot \varsigma 6$ |  |
| － | － | － | 20＇I | 20＇I | VWT rosiueg LI | I 2 E Z | $\mathrm{SILY}^{\text {S q }}$ d Joôueg liol |
| てعL＇t\＄ | †S\＄ | 60.0 | $78^{\circ} 0$ | E6\％ | VWT əöp！̣qI！－łrodsouof 9I | 9＊8 |  |
| てعL＇t\＄ | LS\＄ | 60.0 | $78^{\circ}$ | $\varepsilon 6.0$ | VWT əôp！̣qI！－Łıodsəuof 9I | I＇6 | GSつ วəq巴soow Z6ZI |
| てعL＇t\＄ | z0E\＄ | 60.0 | t80 | E6\％ | VWT əosp！̣qI！－дıodsouof 9I | t．8t | LE GVSW／LE $\cap$ SU IEZI |
| ．дцэхә $\mathbf{L}$ <br> ．əd $\mathbf{1 s O}$ |  | วธีบหบว | $\begin{gathered} \text { ұuәuұsn!py } \\ \text { ұиә... } \end{gathered}$ |  | VW＇T PIO |  GLI | OVS |


| LLS ${ }^{\text { }}$ \＄${ }^{-}$ | 82\＄ | ع0＊ $0^{-}$ | 96\％ | E6＊0 | VWT s！ele ${ }^{\text {ch }}$ | ¢＇£I | †I CVSW／t8 ПSt 80ZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| LLS＇IS－ | L\＄ | \＆0＇0－ | 96.0 | E6\％ | VWT S！̣⿺辶¢ ¢ ¢ | $\varepsilon^{\cdot} \varepsilon$ | GSつ ขôuxy lseg 88ZI |
| LLS＇I\＄ | ャて\＄－ | $\varepsilon 0^{\circ} 0^{-}$ | 96.0 | E6\％ | VNT s！erej sz | カ・I | d！̣sumol ue！pui ILZI |
| LLS＇I\＄ | 61\＄－ | E0＊${ }^{-}$ | 96.0 | E6\％ | VNT s！erej sz | $0 \%$ |  |
| LLS＇I\＄ | L\＄ | E0＊${ }^{-}$ | $96^{\circ} 0$ | E6\％ | VNT s！erej ¢z | $\dagger^{*} \varepsilon$ |  |
| LLS＇I\＄ | 0L\＄ | $\varepsilon 0^{\circ} 0^{-}$ | 96.0 | E6\％ | VNT s！erej sz | L＇$\varepsilon \varepsilon$ | SIMP S qnd S！e［eว 8z0I |
| LLS＇I\＄ | てS\＄ | E0＊ $0^{-}$ | 96．0 | E6\％ | VNT s！erej cz | $8{ }^{\circ} \downarrow$ ¢ |  |
| LLS＇IS＇ | 6\＄ | ع0＇0－ | 96.0 | $\varepsilon 6.0$ | VWר s！eje〕 ¢ | $\dagger^{\circ} \mathrm{t}$ |  |
| LLS ${ }^{\text {T }}{ }^{-}$ | SIS－ | E0＊${ }^{-}$ | $96^{\circ} 0$ | E6\％ | VWT uołobu！ume y tz | ガレ |  |
| LLS＇I\＄ | ¢0¢\＄－ | E0＇0－ | 96．0 | $\varepsilon 6.0$ | VWT uо̧ôu！ume $\dagger$ tて | L＇9tI | 60 กSを 90ZE |
| LLS＇I\＄ | をวて\＄ | E0＊${ }^{-}$ | 96.0 | E6\％ | VWT uofolu！ume | でLOI | \＆L $\cap$ St 86IE |
| LLS＇I\＄ | 8E\＄－ | E0＊ $0^{-}$ | 96.0 | E6\％ | VWT uołôu！mux ${ }^{\text {¢ }}$ t乙 | c．8I | 8L ПSy t8IE |
| LLS＇I ${ }^{-}$ | \＆II\＄ | E0＇0－ | 96.0 | $\varepsilon 6.0$ | VWT иоъธิu！ | $t \cdot 5$ | 8¢ GVSW／8¢ กSt z¢ZI |
| 089 ${ }^{\text { }}$ \＄ | ISES | L0．0 | $98^{\circ} 0$ | E6\％ | VWT pue［MOH－uloou！ | $s^{\prime}$ VL | L9 ПSy ¢LIE |
| 089 ${ }^{\text {¢ }}$ ¢ | 76I\＄ | L0．0 | $98^{\circ} 0$ | \＆6\％ | VWT pue［моН－йоои！т $\varepsilon \tau$ | 000 t | İ GVSW／IE กSy czzI |
| 97ऽ\＄ | 2\＄ | 10.0 | E6\％ | t6．0 | VWT profunt $z Z$ | $0^{\circ} \mathrm{E}$ |  |
| 92S\＄ | 6ZI\＄ | 10.0 | E6\％ | ＋6．0 | VWT projuny $て$ て | L＇¢8I | 0I ПSt 6¢IE |
| 92S\＄ | 6\＆\＄ | 10.0 | E6．0 | ＋6．0 | VWT projuny zz | 6.95 | カt CVSW／tャ กS |
| E0I＇z\＄ | ¢0Z\＄ | t0 0 | $68^{\circ} 0$ | E6．0 | VWT Iosueg rəno IZ | $0 \cdot \square L$ | t9 CVSW／t9 ПSt 8czI |
| E0I＇z\＄ | 9ZI\＄ | t0．0 | $68^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ | VWT roŝuxg mənO IZ | $t \cdot$ ¢ | £Z CVSW／L8 ПS |
| E0I＇z\＄ | 0ع\＄ | †0．0 | $68^{\circ} 0$ | $\varepsilon 6.0$ | VWT roŝueg ıənO IZ | 801 |  |
| － | － | － | E6\％ | E6＊ | VNT roqreh reg－yriomsila 0 O | $0^{\circ} \mathrm{E}$ |  |
| － | － | － | \＆6\％ | E6\％ |  | 08 | $\mathrm{si} \mathrm{\varphi}^{\circ} \mathrm{S}$ qnd S！ |
| － | － | － | E6\％ | $\varepsilon 6.0$ | VWT roqreh reg－પriomsila 0 O | ¢ $\dagger$ ¢ | 七て 1 St 691E |
| － | － | － | E6\％ | $\varepsilon 6 \%$ |  | s＇てt |  |
| － | － | － | \＆6\％ | E6\％ | VNT roqrey reg－чıIOMsili 0 0z | $\varsigma^{\circ} \varepsilon I$ |  |
| － | － | － | E6\％ | $\varepsilon 6.0$ |  | ガゅI |  |
| － | － | － | E6\％ | $\varepsilon 6 \%$ | VWT roqreh reg－ynomsili oz | 601 |  |
| － | － | － | \＆6\％ | E6\％ | VWT roqreh reg－ylomsili oz | $9 \downarrow$ I |  |
| － | － | － | E6．0 | E6\％ | VWT roqreh reg－yriomsili oz | $\varepsilon 6 \mathrm{I}$ |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ}$ | VWT roqreh reg－yromsill oz | て＇I |  |
| － | － | － | E6\％ | E6\％ | VWT roqreh reg－yıomsili oz | ¢．91 | $\mathrm{sIM}^{\circ} \mathrm{S} \mathrm{qn}_{\mathrm{d}}$ Yooour H ILOI |
| － | － | － | E6\％ | E6．0 | VWT roqreh reg－yıiomsili oz | L＇t8 |  |
| ．әуэвә L <br>  | （ s 000 ＇$\$$ ） <br>  | วธบ้บบ |  |  | VN＇T PIO | S．дчцвәы HLI | nVS |


| E0I＇Z\＄＇ | 8t\＄－ | ＋0＊${ }^{-}$ | $66^{\circ} 0$ | S6．0 | VWT eysemepen se | ガLI | £ย TVSW／\＆์ กSt LZZI |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| \＆0I＇z\＄＇ | ISIS－ | ＋0．0－ | $66^{\circ} 0$ | S6．0 | VNT |  | Lて $\$ VSN IZZI  \hline \＆0I＇z\＄＇ & 19\＄－ & ＋0＊ $0^{-}$ | $66^{\circ} 0$ | ¢6．0 | VWT uang ue $\Lambda$ ¢ $\varepsilon$ | でで | カて CVSW／88 ПS ${ }^{\text {d }}$ 8IZI |
| LLS ${ }^{6}$ S | t9\＄ | E0＊0 | $06^{\circ} 0$ | E6\％ |  | L＇0¢ | $\mathrm{SIM}^{\text {S }}$ qnd ${ }^{\text {eysemepen }}$ L60I |  |  |  |  |  |
| LLS＇IS | 06I\＄ | E0\％ | $06^{\circ} 0$ | E6\％ |  | L＇I6 | $6 \varepsilon$ กSy tLIE |  |  |  |  |  |
| LLS＇I\＄ | $8 t \$$ | E0．0 | $06^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ |  | $0 \cdot \varepsilon Z$ | ¢ャ CVSW／¢ヵ กSt 6ezI |  |  |  |  |  |
| LLS＇I\＄ | IL\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | $0 \cdot \downarrow \mathcal{L}$ | て૪ CVSW／ても กSせ 9\＆ZI |  |  |  |  |  |
| LLS＇I\＄ | てt\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | $\varepsilon \cdot 0 Z$ | て\＆ $0 V S W / Z \varepsilon$ กSy 97ZI |  |  |  |  |  |
| LLS＇IS | LL\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | $6.9 \varepsilon$ | 0 O CVSW／98 กS $\dagger$ IZI |  |  |  |  |  |
| LLS＇I\＄ | 6IZ\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | $\varsigma \cdot ¢ 01$ | I0 CVSW／6L กSt 96I I |  |  |  |  |  |
| LLS＇IS | £Z\＄ | E0\％ | $06^{\circ} 0$ | E6\％ |  | $\varepsilon \cdot 1$ | si¢os qnd pueipoom L8II |  |  |  |  |  |
| LLS＇I\＄ | 0I\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | $6{ }^{\circ}$ |  |  |  |  |  |  |
| LLS＇IS | 6E\＄ | E0．0 | $06^{\circ} 0$ | E6\％ |  | $0 \% \mathrm{I}$ |  |  |  |  |  |  |
| LLS＇IS | t\＄ | E0．0 | $06^{\circ} 0$ | $\varepsilon 6 \cdot 0$ |  | 8.1 |  |  |  |  |  |  |
| IS0＇I\＄${ }^{-}$ | E9\＄－ | 20＊${ }^{-}$ | ¢6\％ | E6\％ | VWT サo．oxod－．əлоС İ | 8．St | 89 CVSW／89 ПSt I9ZI |  |  |  |  |  |
| IS0＇I\＄ | L9\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6\％ |  | $L \cdot 8 t$ | It CVSW／It กSt ¢EZI |  |  |  |  |  |
| LS0＇IS | ¢¢\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6\％ | VWT サo．rxod－．əлоД İ | $0 \cdot 0 \mathrm{t}$ | t0 CVSW／08 ПSt 86I I |  |  |  |  |  |
| ISO＇I\＄${ }^{-}$ | 97\＄－ | 20＊ $0^{-}$ | ¢6\％ | $\mathcal{E} 6^{\circ}$ |  | $0 \cdot 6 \mathrm{I}$ | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\mathrm{d}}$ ขI！！＾uәอ．ゆ 0L0I |  |  |  |  |  |
| 089＇E\＄${ }^{-}$ | 0¢\＄ | ${ }^{10} 0^{-}$ | E0＇I | 96．0 | VWT иебวучмоэS 6Z | － 01 |  |  |  |  |  |  |
| 089＇E\＄ | IてZ\＄ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 | VNT นеธิวчмоуS 6乙 | 9．St | tL CVSW／tL＠St c9zI |  |  |  |  |  |
| 089＇ $\mathrm{S}^{\text {－}}$ | LEZ\＄ | $10^{\circ} 0^{-}$ | E0．I | 96.0 | VNT นะถิวчмоэS 6Z | 0＊6t | 6¢ CVSW／6¢ ПS |  |  |  |  |  |
| 089＇ $\mathrm{S}^{\text {－}}$ | \＆6L\＄ | L0＇0－ | E0．I | 96.0 |  | 9•¢91 |  |  |  |  |  |  |
| 089＇ $\mathrm{S}^{\text {－}}$ | L6\＄－ | $\angle 0^{\circ} 0^{-}$ | E0＇I | 96.0 | VNT นеธิวчмоуS 6乙 | ［02 | £ I CVSW／E8 กSt LozI |  |  |  |  |  |
| 089＇ $\mathrm{S}^{\text {－}}$ | SLS | $\angle 0^{\circ} 0^{-}$ | E0．I | 96.0 |  | カ・ 1 | ZI CVSW／Z8 ПS 90 I |  |  |  |  |  |
| 629＇z\＄ | ELIS | ${ }^{\text {c }}{ }^{\circ} 0$ | $88^{\circ} 0$ | E6＊ |  | 0．0S | 0¢ ПSt 66IE |  |  |  |  |  |
| 629²\＄ | 6II\＄ | ¢0．0 | $88^{\circ} 0$ | E6\％ | VWT UOֶ［noH 8 \％ | $\bigcirc \cdot \downarrow \mathcal{L}$ | 0L GVSW／0L กSy z9zI |  |  |  |  |  |
| 629＇2\＄ | LLZ\＄ | ¢0．0 | $88^{\circ} 0$ | E6\％ |  | 0.08 | 6 6 CVSW／6Z กSt \＆zZI |  |  |  |  |  |
| 629＇2\＄ | 0ZI\＄ | ¢0．0 | $88^{\circ} 0$ | E6\％ |  | Lヵ¢ |  |  |  |  |  |  |
| 629「2\＄ | IE\＄ | ¢0．0 | $88^{\circ}$ | $\varepsilon 6^{\circ} 0$ |  | 68 |  |  |  |  |  |  |
| 629＇2\＄ | 09\＄ | ¢0．0 | $88^{\circ}$ | E6\％ |  | $\varepsilon \cdot L I$ |  |  |  |  |  |  |
| ．әуэвә $\mathbf{L}$ <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | วธิบหบว | ұиәшиsn！py ұиә．．． |  | VW＇T PIO | S．ə甲црәы HLD | OVS |  |  |  |  |  |


| － | － | － | 20．${ }^{\text {I }}$ | 20＇I | VWL ueltiodo．o！n yotmsunig | t | L＇LLI | SIMPS qnd wotmsunig 9z0I |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 09 $\varepsilon^{6} \angle \$$ | 8976 1 \＄ | †［ ${ }^{\circ}$ | 76 0 | 80＊ |  | $\varepsilon$ | 8081 | ［9 TVSW／［9 ПSt ¢cZI |
| － | － | － | 80＇I | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | ¢．60Z | 七I ПSy z9IE |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | 9＊8EI | ¢0 ПSt 8¢IE |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | $6{ }^{\circ}$ |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | $0 \cdot \varepsilon \dagger \mathrm{I}$ | IS GVSW／IS $\cap$ SU ¢†ZI |
| － | － | － | $80^{\prime}$ I | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | I $\downarrow$ ¢ | ¢I GVSW／¢I＠St 60ZI |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | $0 \cdot 0 \downarrow$ \％ | 90 CVSW／90 ПSy 00ZI |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ | VWL ue！！ | $\varepsilon$ | が0II |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ | VWL uet！ | $\varepsilon$ | で¢¢I |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | － 90 － |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | が6IZ |  |
| － | － | － | 80＇I | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ |  |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ}$ I |  | $\varepsilon$ | $\varepsilon \cdot \varepsilon 8 t$ |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ}$ I |  | $\varepsilon$ | で0LI |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | L＇I9I |  |
| － | － | － | $80^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | 9＊91I |  |
| 97S\＄－ | tt\％－ | $10^{\circ} 0^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | $0 \cdot t 9$ | £ZดSt 89IE |
| 97S\＄－ | L0I\＄－ | $10^{\circ} 0^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | $て ゙ \downarrow ¢ 1$ | IZ $\cap$ St L9IE |
| 97S\＄－ | 88\＄－ | $100^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | c＊LZI |  |
| 97S\＄ | L\＄－ | $10 \%{ }^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | L．0I |  |
| 97S\＄－ | 七IIS－ | $10^{\circ} 0^{-}$ | $60^{\circ} \mathrm{I}$ | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | 0．991 | si¢0 S qnd proyopp！g 9i0I |
| 6Z9＇2\＄ | 0t9\＄ | S0．0 | E0＇I | $80^{\circ} \mathrm{I}$ |  | $\varepsilon$ | 8.781 | LS GVSW／LS ПSt ISZI |
| 9ZS\＄ | EヵI\＄ | 100 | E0＇I | t0＊ | VWL 》o！nisg－p．ofues | 乙 | 6.907 | 09 GVSW／09 ПSt tçI |
| 92S\＄ | £EI\＄ | 10.0 | E0＇I | t0 ${ }^{\circ}$ | VWL yommag－projues | て | 9＊16I |  |
| 97S\＄ | てI\＄ | 100 | E0＇I | t0．I | VWL 壮mıg－piojues | て | $0 \cdot \mathrm{LI}$ | SIMPS qnd uoło 000I |
| IS0＇I\＄ | UIZ\＄ | 20＊${ }^{-}$ | 90＇I | t0． 1 | VWLL youmiag－projues | 乙 | I＇ZSI | ¢E GVSW／¢E กSt 6ZZI |
| － | － | － | 60＊I | 60＇I |  | I | L．00I |  |
| LLS＇I\＄ | 682\＄ | E0\％ | 90＇I | $60^{\circ} \mathrm{I}$ | VWL SIIPM－y ${ }^{-10}$ | I | $0 \cdot 6 \varepsilon 1$ |  |
| LLS＇IS | L9I\＄ | E0\％ | 90＇I | $60^{\circ} \mathrm{I}$ | VWL ${ }^{\text {SIP }}$ M $M-Y \mathrm{Ho}$ | I | て．08 |  |
| 709＇IS ${ }^{-}$ | ¢91＇Z00＇6\＄－ |  |  |  |  |  | £＇II9｀¢ |  |
| t91＇ E \＄ | $86 \varepsilon^{\prime}$ ¢69 6 \＄ |  |  |  |  |  | $6^{*}$ ¢90＇$\varepsilon$ |  |
| LS\＄ | £とでโ69\＄ | ［00＊0 | 100 I | 200＊I |  |  | S’ISI＇ZI | 2u！${ }^{\text {b }}$ |
| ләцэва $\mathbf{L}$ <br>  |  | วธบหบว |  | 60．1 07 E6．0 ұuәuцsn！py |  |  |  | OVS |


| 97S\＄－ | ＋6\＄－ | 10＊0－ | $86^{\circ} 0$ | L6．0 | VWL URษ！ | 0＊9EI | ZS TVSW／ZS ПSt 9tZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 92S\＄ | IS\＄－ | $100^{-}$ | $86^{\circ}$ | L6．0 |  | $て ゙ \downarrow L$ | SIMPS qnd uoqs！${ }^{\text {L }}$ Z60I |
| 97S\＄－ | 6EZ\＄－ | $100^{-}$ | $86^{\circ}$ | L6．0 |  | 8 8tを | SIM $^{\text {S qn }}$ d U0łS！MəT 880I |
| 97S\＄ | カ9I\＄ | $10^{\circ} 0^{-}$ | $86^{\circ} 0$ | L6．0 | VWL uet！ | $\varsigma^{\circ} \mathrm{LE}$ Z | $\mathrm{sig}^{5} \mathrm{~S}$ qn ${ }_{\text {d }}$ menqnv L00I |
| 97S\＄${ }^{-}$ | 6E\＄－ | $10^{\circ} 0^{-}$ | t6．0 | E6．0 |  | 6．SS | ZL TVSW／ZL ПSy t9zI |
| 92¢\＄－ | 6 b － | $10^{\circ} 0^{-}$ | ＋6．0 | E6．0 |  | て＇IL | ¢¢ GVSW／¢¢ ПSt 6tzI |
| 97S\＄${ }^{-}$ | SSIS | 10\％${ }^{-}$ | ＋6．0 | E6\％ |  |  | LI TVSW／LI＠SY IIZI |
| LLS＇I\＄ | IE\＄ | ${ }^{1} 0{ }^{\circ}$ | I0＊ | 七0＊ | VWL иәршеว－риегроч 9 | 0＇¢I |  |
| て\＆L＇t\＄ | L\＄ | $60^{\circ} 0$ | ¢6．0 | t0 ${ }^{\circ}$ | VWL шәриеว－риегэоч 9 | ［＇I |  |
| と0I＇て\＄ | 9 t \＄ | t0 0 | 00 ${ }^{\text {I }}$ | t0 ${ }^{\text {I }}$ | VWL иәриеว－риегүоч 9 | 9＊9I |  |
| E0I＇て\＄ | 8LE\＄ | t0 0 | 00＊${ }^{\text {I }}$ | t0 ${ }^{\text {I }}$ | VWL иәршеว－рихгроч 9 | ＊＊9EI | $\varepsilon I$ ПSt I9IE |
| ع0I＇z\＄ | StI\＄ | t0 0 | 00 ${ }^{\text {I }}$ | t0 $0^{\text {I }}$ | VWL иәриеว－риегүоч 9 | て＇ZS |  |
| ع0I＇z\＄ | ES | t0 0 | 00 ${ }^{\text {I }}$ | ャ0．I | VWL иәриеว－риегүоу 9 | 0＇I | ¢9 TVSW／¢9 คSt 6¢ZI |
| E0I＇て\＄ | ZSE\＄ | t0 0 | 00＊I | t0 ${ }^{\text {I }}$ | VWL шәршеว－риегэоч 9 | $0 \cdot L Z I$ | 0t CVSW／0t $\cap$ St tezI |
| E0I＇て\＄ | ZSI\＄ | t0 0 | 00＇I | t0 ${ }^{\text {I }}$ | VWL иәрихว－рихгүюч 9 | $0 \cdot \varsigma ¢$ | 8て TVSW／8Z กS |
| ع0I＇z\＄ | ¢¢\＄ | t0 0 | 00 ${ }^{\text {I }}$ | ャ0．I | VWL иәриеว－риегүоу 9 | 8．6I | 80 TVSW／80 กSy zozI |
| E0I＇て\＄ | 0E\＄ | t0．0 | 00＇I | t0 ${ }^{\text {I }}$ | VWL шәриеว－риегэоч 9 | 80 I | L0 GVSW／L0 ПSt I0ZI |
| と0I＇て\＄ | 6E\＄ | t0 0 | 00＇I | t0 ${ }^{\text {I }}$ | VWL иәриеว－риегэоу 9 | I＇tI |  |
| ع0I＇て\＄ | ¢ES | †0．0 | 00＇I | ¢0．I | VWL иәриеว－риегүюоу 9 | ¢ ${ }^{\prime}$ I |  |
| $09 \varepsilon^{*} \angle \$$ | SZI\＄ | t［0 | S6．0 | 60＊I |  | 6．ZI |  |
| tSI＇ES | ZZI\＄ | $90^{\circ}$ | E0＇I | $60 \cdot$ I | VWL Квqчıооя $\varsigma$ | $\varepsilon \cdot 67$ | GSP Keg lies leow 06ZI |
| tSI＇ $\mathrm{S}^{\text {S }}$ | L6I\＄ | $90^{\circ} 0$ | E0＇I | $60 \cdot$ I | VWL Kequpoog s | $\bigcirc \cdot L t$ |  |
| 七SI＇ES | II\＄ | $90^{\circ}$ | E0＇I | $60 \cdot$ I | VWL Kequpoog s | 97 |  |
| tSI＇ES | 97\＄ | $90^{\circ}$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWL квqчюооя $\varsigma$ | で9 |  |
| tSI＇ES | ZS\＄ | $90^{\circ}$ | E0＇I | $60 \cdot \mathrm{I}$ | VWL Квqчıооя $\varsigma$ | カ＇ZI |  |
| tSI＇ES | t\＄ | $90^{\circ} 0$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWL Krquroog $\varsigma$ | 0．I | ıdəa looup |
| tSI＇ES | LS\＄ | $90^{\circ}$ | E0＇I | $60^{\circ} \mathrm{I}$ | VWL квqчıооя $\varsigma$ | $8^{\cdot} \varepsilon 1$ | SIMPS qnd IOłS！！g \＆zoI |
| 089＇$¢ \$$ | $\dagger$ ¢ | L0．0 | 20＇I | $60^{\circ} \mathrm{I}$ | VWL квqчıооя $\varsigma$ | $0 \cdot L$ |  |
| － | － | － | 20＊I | 20＊I | VWL UEれ！！odoro！W rotMsunig t | 0＊IEI | กSYヤT－I0 ПSy ZSIE |
| － | － | － | 20＇I | 20＇I |  | 60LI | ¢ $\angle$ dVSW／¢L กSt 99ZI |
| － | － | － | 20＇I | 20＇I | VWL uet！jodonom rommsunig t | ¢．9t |  |
| － | － | － | 20＇I | 20＇I |  | 901 | SIMPS qnd પleg isom tlil |
| － | － | － | 20＊I | 20＊I |  | c．8 |  |
| ．лурэәц <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | วธิบหบว |  | 60．I 07 E6＊0 ұuәuцsn！py |  | S．əуреә $\mathbf{L}$ HLL | OVS |


| － | － | － | E6\％ | E6．0 |  | て＇II |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| － | － | － | E6\％ | E6．0 | VWL чıIOMsIIG ZI | ¢．91 |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL чıомsIIG $て$ I | L $\downarrow 8$ |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL чıомsIIG $て$ I | L＇Z |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL بـıомsila zI | $\varepsilon ่$ ¢ |  |
| 92S\＄ | 8t\＄ | $10^{\circ} 0^{-}$ | ＋6．0 | $\varepsilon 6.0$ | VWL بıIOMsIIG $て$ I | ャ＊ 69 | ¢Z ПSy 0LIE |
| ISO＇IS－ | tt\％ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWL чıIOMsIIG ZI | 8＇IE |  |
| ISO＇IS－ | ¢\＄－ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWL بـı二八sila zI | $9^{\circ} \mathrm{E}$ | 9L GVSW L9ZI |
| ISO＇IS－ | EI\＄－ | 20＊－ | ¢6．0 | $\varepsilon 6.0$ | VWL чıIOMsIIG ZI | で6 |  |
| ISO＇IS－ | てIS－ | 20\％${ }^{-}$ | ¢6\％ | $\varepsilon 6^{\circ} 0$ | VWL чıомsIIG てI | ¢．8 |  |
| ISO＇IS－ | 1\＄ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWL чıIOMsila zI | 0＇I |  |
| ISO＇IS－ | 01\＄－ | 20＊－ | S6．0 | $\varepsilon 6^{\circ} 0$ | VWL чıомsila zI | 69 |  |
| ISO＇IS－ | 2I\＄－ | 20\％${ }^{-}$ | ¢6\％ | E6．0 | VWL ¢цомsIİ $て$ I | 9＊8 |  |
| ISO＇IS－ | IIS | 20＊－ | ¢6．0 | $\varepsilon 6^{\circ} 0$ | VWL بـıомsila zI | て＇8 |  |
| IS0＇IS－ | LES－ | 20．0－ | ¢6．0 | E6\％ |  | 8．92 |  |
| 629＇2\＄－ | I8E\＄ | S0＊ $0^{-}$ | I0＊ | 96.0 |  | 0001 | IL ПS甘 ItてE |
| 629＇2\＄－ | てE\＄－ | ¢0．0－ | 10．I | 96.0 |  | $\varepsilon 6$ |  |
| 629＇2\＄－ | £ยI\＄－ | ¢0\％ $0^{-}$ | ［0＇I | 96.0 |  | ナ 8 \＆ | 0ZПSを 99IE |
| 629＇2\＄－ | 60\＆\＄－ | ¢0\％ $0^{-}$ | ［0＇I | 96.0 | VWL ISflpg II $^{\text {def }}$ | ヤ68 | £0 TVSW／E0 กSt L6II |
| 629＇2\＄－ | tt\＄－ | ¢0．0－ | 10． 1 | 96.0 | VWL | L＇ZI | $\mathrm{sIM}^{\text {S }}$ qn ${ }_{\text {d oroqsojSI }}$ 6L0I |
| ع0I＇Z\＄－ | I0t\＄－ | 50 $0^{-}$ | L6．0 | E6．0 |  | $6{ }^{\circ} \mathrm{t}$ I | 6t CVSW／6t ПSt EtZI |
| ع01＇z\＄－ | 0とZ\＄－ | ¢0 $0^{-}$ | L60 | E6．0 |  | て＇と8 | SIMPS MoIsu！M E8II |
| E0I＇${ }^{\text {c }}$－ | 00E\＄－ | 50．0－ | L6．0 | $\varepsilon 6.0$ |  | £ 80 I |  |
| IS0＇IS－ | ItI \＄ | 20＊0－ | ¢6．0 | E6．0 | VWL Uセれ！！odo．o！W elsnofn 6 | ¢＇10I | 8E กSを ELIE |
| ISO＇IS－ | 6ヶて\＄ | 20＊－ | ¢6．0 | $\varepsilon 6.0$ |  | 8．6LI | 8I $\cap$ St t9IE |
| IS0＇IS－ | 001\＄－ | 20＊－ | ¢6．0 | $\varepsilon 6^{\circ} 0$ |  | $t^{*} \mathrm{ZL}$ | ZI $\cap$ Sy 09IE |
| ISO＇IS－ | 912\＄ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ |  | $8 . ¢ ¢ 1$ | Z0 ПS 9 9¢E |
| ISO＇IS－ | 002\＄ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6.0$ |  | $\varepsilon \cdot \downarrow \downarrow$ I | I I $\mathrm{aVSW} / \mathrm{I}$ I $\cap \mathrm{SU}$ ¢0ZI |
| ISO＇IS－ | 06\＄－ | 20\％${ }^{-}$ | ¢6\％ | $\varepsilon 6^{\circ} 0$ | VWL uet！odono！N elsnônv 6 | $6 \cdot \downarrow 9$ |  |
| ISO＇IS－ | tts－ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6^{\circ} 0$ |  | $¢^{\prime}$ IE |  |
| ISO＇IS－ | 881\＄ | 20\％${ }^{-}$ | ¢6．0 | E6．0 |  | $\varsigma \cdot \varsigma \mathcal{L}$ |  |
| 92S\＄${ }^{-}$ | 08\＄－ | $10^{\circ} 0^{-}$ | $86^{\circ}$ | L6．0 |  | †＇¢II | 9I ПSt \＆9IE |
| 97S\＄－ | ¢9\＄－ | $10^{\circ} 0^{-}$ | $86^{\circ}$ | L6．0 |  | $9 \cdot 76$ | †0 ПS |
| ．луэвә $\mathbf{L}$ <br>  | （ s 000 © $\$$ <br> 150つ рдви！̣яя | วธูบหบว | $\begin{gathered} \text { ұиәшцsn!py } \\ \text { ұшә..ın’ } \end{gathered}$ | 60．1 07 \＆6．0 ұ $u$ әuısn！py |  |  | OVS |


| 089 ＇${ }^{\text {¢ }}$－ | LEZ\＄ | L0＇0－ | $\mathcal{E} 0 \cdot \mathrm{I}$ | 96．0 |  | $0 \% 6$ | 6¢ aVSW／6¢ ПSt \＆ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 089 ＇${ }^{\text {¢ }}$－ | E6L\＄ | L0．0－ | E0＇I | 96.0 | VWL 廿ебวәчмоэ\S 9I | 9＊E9 I |  |
| 089 ＇ $\mathrm{S}^{\text {－}}$ | L6\＄－ | L0＇0－ | E0＇I | 96.0 | VWL 廿ебวәчмо》S 9I | ［0\％ |  |
| 089＇${ }^{\text {¢ }}$－ | SLS－ | L0 $0^{-}$ | E0＇I | 96.0 | VWL иеб๐วчмоуS 91 | $\nabla^{\circ} \mathrm{C}$ I | ZI TVSW／Z8 ПSษ 90ZI |
| LLS＇IS－ | SIS－ | \＆0＇0－ | 960 | E6．0 | VWL U0łธีu！ | －${ }^{\text {c }}$ |  |
| LLS＇IS－ | ¢0¢\＄－ | \＆ $0^{\circ} 0^{-}$ | 96.0 | E6．0 | VWL uotolu！uxy ¢ | $L \cdot 9 t I$ | 60 กSy 90zを |
| LLS＇IS－ | をวて\＄ | \＆ $0^{\circ} 0^{-}$ | 96.0 | $\varepsilon 6.0$ | VWL uotolu！ume $\mathrm{S}_{\text {¢ }}$ | でLOI | \＆L กSy 86IE |
| LLS＇IS－ | 8E\＄－ | \＆ $0^{\circ} 0^{-}$ | 96.0 | $\varepsilon 6.0$ | VWL uotolu！ume $\mathrm{S}_{\text {¢ }}$ | c．8I | 8L ПSy †8IE |
| LLS＇IS－ | \＆II\＄－ | \＆0\％${ }^{-}$ | 96.0 | $\varepsilon 6.0$ | VWL uotolu！ume ${ }_{\text {¢ }}$ ¢ |  | 8¢ TVSW／8¢ ПSt Z¢ZI |
| ISO＇IS－ | L\＄－ | 20\％${ }^{-}$ | ¢6．0 | $\varepsilon 6.0$ | VWL uotolu！ume ¢ $^{\text {I }}$ | $8{ }^{\circ}$ |  |
| 97S\＄ | 2\＄ | 10.0 | E6\％ | 76．0 | VWL profunt tI | $0^{\circ} \mathrm{E}$ |  |
| 97S\＄ | 6ZI\＄ | 10.0 | E6\％ | 76．0 | VWL proyment $\dagger \mathrm{I}$ | L＇S8I | 0I $\cap$ St 6SIE |
| 97¢\＄ | 6E\＄ | 10.0 | E6．0 | เ6．0 | VWL profunt $\dagger \mathrm{I}$ | 6.95 | 切 TVSW／tt ПS |
| てEL＇t\＄ | ¢I\＄ | $60^{\circ} 0$ | 78 ${ }^{\circ}$ | E6．0 | VWL SE！̣ГセW हI | t＇Z |  |
| てعL＇t\＄ | てE\＄ | $60^{\circ} 0$ | 78 $8^{\circ}$ | $\varepsilon 6.0$ |  | I＇S |  |
| てعL＇t\＄ | 9\＆\＄ | $60^{\circ}$ | $78^{\circ}$ | E6．0 | VWL SE！¢欠ֻN عI | $L \cdot S$ |  |
| てعL＇t\＄ | 8L\＄ | $60^{\circ} 0$ | $78^{\circ}$ | $\varepsilon 6^{\circ} 0$ | VWLL SE！¢ヤ૨W عI | s＇ZI |  |
| てعL＇t\＄ | ¢¢\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL SE！¢丁セN عI | 6.8 | 6I TVSW／¢8 ПSt \＆IZI |
| て\＆L＇t\＄ | 9\＄ | $60^{\circ} 0$ | $78^{\circ}$ | E6．0 | VWLL SE！¢ヤ૨W عI | 0＇I |  |
| てعL＇t\＄ | 8IZ\＄ | $60^{\circ}$ | 78 $8^{\circ}$ | E6．0 | VWL SE！̣欠еN عI | $0 \cdot \mathcal{E}$ |  |
| てعL＇t\＄ | 62\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ |  | $9{ }^{\circ}$ | $\mathrm{sIL}^{\circ} \mathrm{S}$ qnd oıoqsəuof $\mathrm{Z80I}$ |
| て\＆L＇t\＄ | tS\＄ | $60^{\circ} 0$ | $78^{\circ}$ | E6．0 | VWLL SE！¢ヤ૨W عI | 9.8 |  |
| てEL＇t\＄ | LS\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL SE！¢วセW EI | ［ 6 | GSつ эəq巴soow Z6ZI |
| てعL＇カ\＄ | z0E\＄ | $60^{\circ}$ | $78^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ |  | － 8 t |  |
| てEL＇t\＄ | $\varepsilon L \$$ | $60^{\circ} 0$ | 78 0 | $\varepsilon 6^{\circ} 0$ | VWL SE！̣วセW عI | L＇II |  |
| てعL＇t\＄ | It\＄ | $60^{\circ} 0$ | เ8．0 | $\varepsilon 6^{\circ}$ | VWL SE！¢丁セN عI | 9.9 |  |
| － | － | － | E6\％ | E6．0 | VWL ЧІІОМSIIG ZI | S＇tL | 七て |
| － | － | － | E6\％ | E6．0 | VWL ЧıIOMSIIG ZI | s＇zt |  |
| － | － | － | E6\％ | E6．0 | VWL ЧમIOMsIİ ZI | $\varsigma^{\circ} \mathrm{E}$ I |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL ЧમIOMsIİ ZI | ガカI |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL ЧıIOMSIİ ZI | 6．01 |  |
| － | － | － | E6\％ | $\varepsilon 6^{\circ} 0$ | VWL ЧДOMsIIG ZI | $9 . t$ |  |
| － | － | － | E6\％ | E6．0 | VWL ЧમIOMsIIG ZI | $\varepsilon .61$ |  |
| ．луэед $\mathbf{L}$ <br>  | （s000＇\＄） ISOD рәұשu！̣st | วธิบหบว |  | 60․ 07 \＆6．0 ұ $\downarrow$ әuュsn！py |  | миәчэвә L TLI | OVS |


| てEL＇t\＄ | ¢0I\＄ | $60^{\circ} 0$ | t8 ${ }^{\circ}$ | E6．0 | VWL s！e［e］0z | 891 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| てعL＇t\＄ | ¢¢\＄ | $60^{\circ} 0$ | 78．0 | E6．0 | VNL s！efe 0 0z | 8.8 |  |
| てعL＇t\＄ | £S\＄ | $60^{\circ}$ | t8 0 | $\varepsilon 6^{\circ} 0$ | VNL s！erej 0z | ¢．8 |  |
| て¢L＇t\＄ | ¢6\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6^{\circ} 0$ | VNL s！̣peつ 0 ¢ | て＇SI |  |
| 629＇2\＄ | 0ZI\＄ | S0．0 | $88^{\circ} 0$ | E6\％ |  | L＇もE |  |
| 6て9「て\＄ | IES | ¢0．0 | $88^{\circ} 0$ | E6．0 |  | 68 |  |
| 6Z9「て\＄ | 09\＄ | ¢0．0 | $88^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ |  | $\varepsilon \cdot L I$ |  |
| 089 ＇ $\mathrm{S}^{\text {S }}$ | ISE\＄ | L0＇0 | $98^{\circ} 0$ | E6．0 | VWL æ＞＞＞ои！！！！W－u！oou！ 6 6 | s．ZL | L9 ПS ¢LIE |
| IS0＇IS－ | LI\＄－ | 20\％${ }^{-}$ | ¢6．0 | E6．0 | VWL æจソวои！！I！W－u | カてI | $0 \varepsilon$ TVSW／0¢ กS $\dagger$ ¢ZI |
| $09 \varepsilon^{*} \angle \$$ | 88E\＄ | † ${ }^{\circ} 0$ | $98^{\circ} 0$ | 00＊I | VWL uet！！odonəW Jos̃ueg 8I | 000 | İ CVSW／IE กSy czzI |
| E8L＇s\＄ | t9s\＄ | II0 | $68^{\circ} 0$ | 00＇I | VWL uセt！¢odonəw roŝueg 8I | 0 －$\downarrow$ | t9 GVSW／ち9 ПSt 8¢ZI |
| E8L＇s\＄ | $9 t$ ¢ | IIO | $68^{\circ} 0$ | 00＊I | VWL uet！！odonow roŝueg 8I | $\nabla^{\circ} \mathrm{S} \downarrow$ | £Z TVSW／L8 ПSษ LIZI |
| E8L＇S\＄ | 28\＄ | I 10 | $68^{\circ} 0$ | 00＇${ }^{\text {I }}$ | VWL 廿セt！！odonəW rosureg 8I | 801 |  |
| 089＇${ }^{\text {¢ }}$ \＄ | ¢I\＄ | L0．0 | E6\％ | 00＇I | VWL uセt！！odonəw loŝueg 8I | $0^{\circ} \mathrm{E}$ | GSP әu！ |
| 089＇E\＄ | 6E\＄ | L0＇0 | E6\％ | 00＊I | VWL uet！！odonow roŝueg 8I | $0 \cdot 8$ |  |
| IS0＇IS－ | L02\＄ | 20．0－ | 20．I | 00＇I | VWL uet！！odonəw rosurg 8I | $0 \cdot ¢ \rightarrow I$ | てZ 1 Sษ LIZを |
| ISO＇IS－ | てEI\＄ | 20＊${ }^{-}$ | 20＊I | 00＇I | VWL uセt！！odonəN roŝueg 8I | 9＇S6 | 七\＆$\cap$ Sy てLIE |
| ISO＇IS－ | 88\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uet！！odonow roŝueg 8I | ャ®¢ | 9 9S ${ }^{\text {a }}$ ILIE |
| ISO＇IS－ | \＆¢ - | 20＊ $0^{-}$ | 20＊I | 00＇I | VWL uセt！¢odonəw loŝueg 8I | ¢91 | pueisI ue！pui 0LZI |
| ISO＇IS－ | tS\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uセt！¢odonəN roŝueg 8I | $06 \varepsilon$ | £9 TVSW／\＆9 กSt L¢ZI |
| ISO＇IS－ | ¢IS－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uet！iodonow roŝueg 8I | 901 |  |
| ISO＇IS－ | LES－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uet！¢odonəN roŝueg 8I | L．9Z |  |
| ISO＇IS－ | IES－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uセt！¢odonəN loŝueg 8I | でで | SIMPS qnd profl！w 90II |
| ISO＇IS－ | ち01\＄－ | 20．0－ | 20＇I | 00＇${ }^{\text {I }}$ | VWL uet！！odonow rosureg 8I | $6.7 L$ |  |
| ISO＇IS－ | St\＄－ | 20＊ $0^{-}$ | 20．I | 00＇I | VWL uセt！ | でてを |  |
| ISO＇IS－ | て¢I\＄ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uセt！¢odonəN loŝueg 8I | 0 ¢6 |  |
| ISO＇IS－ | 8てE\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇${ }^{\text {I }}$ | VWL 廿セt！！odonəW rosureg 8I | － $2 \in \mathcal{L}$ | $\mathrm{SILO}^{\text {S qn }}$ dooiueg ILOI |
| tSI＇ES | て¢\＄ | $90^{\circ} 0$ | ＋6．0 | 00．${ }^{\text {I }}$ | VWL uセt！¢odonp | カてI | sly’s qnd urчрәの 9t0I |
| IS0＇I\＄ | I6I\＄ | 200 | 76．0 | 96.0 | VWL ployshl d LI | 6．LEI | 6I ПSษ ¢9IE |
| ISO＇I\＄ | IL\＄ | 200 | ＋6．0 | 96.0 | VWL ppysht ${ }^{\text {d }}$ LI | I＇IS |  |
| LS0＇IS | LS | 20.0 | ＋6．0 | 96.0 | VWL ppysty！d LI | $\varepsilon \cdot \varsigma$ |  |
| 089 ${ }^{\text {® }}$－ | 0¢\＄ | L0 $0^{-}$ | E0＇I | 96.0 |  | － 01 | $\mathrm{SIM}^{\text {S }}$ qnd SUวЧ1V IEZE |
| $089{ }^{\text {¢ ¢ }}$－ | IZZ\＄ | L0 $0^{-}$ | E0＇I | 96.0 | VWL иебәәчмоэS 9I | $9^{\circ} \mathrm{S}$ ¢ | tL CVSW／tL $\cap$ Sy ¢9ZI |
| ．әуръә $\mathbf{L}$ <br> ．əə $\mathfrak{q}$ soう |  | วธบบบบ | $\begin{gathered} \text { ұшәшцsn!py } \\ \text { ұиә.ли刀 } \end{gathered}$ | 60．I 07 E6．0 ұuәuцsn！py |  |  | OVS |


| 97S\＄ | t6\＄－ | $10^{\circ} 0^{-}$ | $86^{\circ}$ | L6．0 | VWL uセt！ | 0．9EI | Z¢ GVSW／Zऽ ПSv 9tzI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 92S\＄ | IS\＄－ | $10 \cdot 0-$ | $86^{\circ} 0$ | L6．0 | VWL Uع！！ | でヤL |  |
| 97S\＄ | 6\＆Z\＄－ | $10 \cdot 0$ | $86^{\circ} 0$ | L6．0 |  | 8 8ttを | $\mathrm{SIL}^{3} \mathrm{~S}$ qnd U0łS！MวT 880I |
| 92s\＄－ | カ91\＄ | $10^{\circ} 0^{-}$ | 86.0 | L6．0 | VWL uet！ | S．LEZ | SIMPS qnd umqnv L00I |
| 97S\＄ | 6ES－ | $10^{\circ} 0^{-}$ | 76.0 | E6\％ |  | 6．¢S | ZL GVSW／ZL ПSY t9ZI |
| 97S\＄ | 6t\＄－ | $10^{\circ} 0^{-}$ | ＋6．0 | \＆6\％ |  | でIL | ¢¢ GVSW／¢¢ ПSt 6tZI |
| 92S\＄ | S¢I\＄－ | $10^{\circ} 0^{-}$ | ＋6．0 | E6\％ |  |  | LI GVSW／LI＠St ILZI |
| LLS ${ }^{6}$ I\＄ | IES | E0\％ | 10． | †0＊I | VWL иәршеว－риегヤoч 9 | 0＇SI |  |
| てEL＇t\＄ | L\＄ | 60.0 | ¢6．0 | ¢0． I | VWL иәриеว－риегюоч 9 | ［＇I |  |
| E0I＇て\＄ | 9 t \＄ | t0 0 | 00＇I | t0 ${ }^{\circ}$ | VWL шәриеว－риегюоч 9 | 9＊9 |  |
| E0I＇て\＄ | 8LES | t0．0 | 00＇I | カ0． I | VWL иәриеว－риегүоу 9 | ャッ¢ | $\varepsilon I$ ПSt $591 \varepsilon$ |
| ع0I＇て\＄ | ¢ヵIS | t0 0 | 00＇I | ¢0．I | VWL иәриеว－риегюоу 9 | て＇ZS | GSP UMOL |
| E0I＇て\＄ | E\＄ | t0 0 | 00＇I | ¢0． I | VWL шәриеว－риегюоч 9 | 0＇I | ¢9 GVSW／¢9 ПSt 6¢ZI |
| E0I＇て\＄ | ZSE\＄ | t0 0 | 00＇I | 70． I | VWL иәриеว－риегюоу 9 | $0 \cdot L Z I$ | 0t GVSW／0t ПS |
| E0I＇て\＄ | て¢I\＄ | ＋0．0 | 00＇I | ¢0 $0^{\circ}$ | VWL иәриеว－риегюоу 9 | $0 \cdot \varsigma ¢$ | 8Z GVSW／8Z ПS |
| ع0I＇て\＄ | ¢¢\＄ | t0 0 | 00＇I | ¢0． I | VWL иәриеว－риегюоу 9 | 86 I | 80 GVSW／80 ПSy zozI |
| ع0I＇て\＄ | 0\＆\＄ | t0 0 | 00＇I | ¢0． I | VWL иәриеว－риегүоу 9 | 80 I | L0 GVSW／L0 ПSt I0ZI |
| E0I＇て\＄ | 6\＆\＄ | t0 0 | 00＇I | t0 ${ }^{\text {I }}$ | VWL иәриеว－риегэоу 9 | I＇tI |  |
| ع0I＇て\＄ | ¢¢\＄ | †0．0 | 00．${ }^{\text {I }}$ | $70^{\circ} \mathrm{I}$ | VWL иәриеว－риегүоу 9 | ¢ $\quad$ I |  |
| $09 \varepsilon^{\prime} \angle \$$ | ¢ZI\＄ | 七I＇0 | ${ }^{\text {S }}{ }^{\circ} 0$ | 60＊ | VWL KеqЧloog s | 6．ZI | $\mathrm{SIM}^{\text {S }} \mathrm{qn}^{\text {d uosiəjor I80I }}$ |
| tSI＇ $\mathrm{L}^{\text {S }}$ | ZZI\＄ | $90^{\circ} 0$ | E0＇I | 60＇I |  | $\varepsilon \%$ \％ | GSD Keg lies leor 06ZI |
| tSI＇ $\mathrm{L}^{\text {S }}$ | L6I\＄ | $90^{\circ} 0$ | E0＇I | 60＊I | VWL Квqчıооя $\varsigma$ | $S^{\circ} \mathrm{L}$（t |  |
| tSI＇ $\mathrm{S}^{\text {S }}$ | I I\＄ | 90.0 | E0＇I | $60^{\circ} \mathrm{I}$ | VWL Квqчıооя $\varsigma$ | $9{ }^{\circ}$ |  |
| 七¢I＇ES | 97\＄ | $90^{\circ} 0$ | E0＇I | 60＇I | VWL кеqчıооя $\varsigma$ | で9 |  |
| tSI＇ $\mathrm{L}^{\text {S }}$ | ZS\＄ | 90.0 | E0＇I | 60＇I | VWL Квqчıооя $\varsigma$ | ガてI | $\mathrm{sim}^{3} \mathrm{~S} \mathrm{qn}_{\mathrm{d}}$ oroqjiqon LIII |
| tSI＇ $\mathrm{S}^{\text {S }}$ | t\＄ | 90.0 | E0＇I | $60^{\circ} \mathrm{I}$ | VWL Квqчıооя $\varsigma$ | 0＇I | də |
| t¢I＇E\＄ | LS\＄ | $90^{\circ} 0$ | E0＇I | 60＇I | VWL Квqчıооя $\varsigma$ | $8^{\circ} \mathrm{E}$ I |  |
| $089{ }^{\prime}$ ¢ \＄ | $\dagger$ ¢ | L0\％ | 20＇I | 60＊${ }^{\circ}$ | VWL Квqчıооя $\varsigma$ | $0^{\circ} \mathrm{L}$ |  |
| － | － | － | 20＊I | 20＊I |  | 0＊IEI | ПS\＆スT－I0 ПS |
| － | － | － | 20＇I | 20＊I | VWL uet！odomo！N yo！msunig t | 60LI | ¢L GVSW／¢L ПSt 99ZI |
| － | － | － | 20＇I | 20＊I |  | ¢ $9 \downarrow$ |  |
| － | － | － | 20＇I | 20＊I |  | 901 |  |
| － | － | － | 20＇I | 20＊I |  | c．8 |  |
| ．луэед $\mathbf{L}$ <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 | （ s 000 © $\$$ ） 7SOD рәұвш！̣я木 | วธีบหบว | ұ $u$ әuュsn！ pv <br>  | dej $\ddagger{ }^{\circ} \mathrm{S} \angle 0^{\circ} \mathrm{I}$ ． 100 IH E6．0 ұиәшцsn！py |  | $\begin{gathered} \text { S.әчэвә } \mathbf{L} \\ \text { GLLI } \end{gathered}$ | OVS |




 1008 Augusta Pub Schls
1166 Vassalboro Pub Schls
1185 Winthrop Pub Schls
1205 RSU $11 /$ MSAD 11
3156 RSU 02
3160
RSU 12
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RSU 18
3173 RSU 38 .

| 089 ＇$¢$ \＄ | LEZ\＄－ | L0 $0^{-}$ | E0＇I | 96.0 | VWL иеоิวчмоуS 91 | $0 \% 6$ | 6¢ TVSW／6¢ กSt \＆¢ZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 089 ＇$¢$－ | £6L\＄ | L0 $0^{-}$ | E0＇I | 96.0 | VNL иеоэวчмоэS 9I | 9＊E9I |  |
| 089 ＇$¢$ \＄ | L6\＄－ | L0 $0^{-}$ | E0＇I | 96.0 | VNL и¢оэวчмоэS 91 | I 0 \％ | £I TVSW／E8 กSt LoZI |
| $089{ }^{\text {＇} ¢ \$-}$ | ¢ LS－ | L0 $0^{-}$ | E0＇I | 96.0 | VWL иеоэәчмоуS 91 | $\nabla^{\circ} \mathrm{S}$ I | てI TVSW／Z8 กSy 90ZI |
| LLS＇IS－ | ¢IS－ | E0＊ $0^{-}$ | $96^{\circ} 0$ | E6\％ |  | ガL | S［¢J S qnd s！̣sng 6zze |
| LLS＇IS－ | ¢0¢\＄－ | ع0\％${ }^{-}$ | 96.0 | £6\％ | VWL uołôu！ | L＇9tI | 60 กSy 90Zを |
| LLS＇IS－ | をวて\＄－ | \＆ $0^{\circ} 0^{-}$ | 96.0 | E6．0 | VWL uoъoิu！ | でLOI | EL＠Sy 86IE |
| LLS＇IS－ | 8E\＄－ | ع0\％ $0^{-}$ | 96.0 | $\varepsilon 6.0$ | VWL uoŋolu！ume ${ }^{\text {¢ }}$ I | c．8I | 8L กSy t8IE |
| LLS＇IS－ | \＆II\＄－ | E0\％ $0^{-}$ | 96.0 | $\varepsilon 6^{\circ} 0$ | VWL uoŋolu！ume ${ }^{\text {¢ }}$ ¢ | $t \cdot \mathrm{~S}$ | 8¢ TVSW／8¢ ПSt Z¢ZI |
| IS0＇IS－ | L\＄ | 20＊${ }^{-}$ | ¢6．0 | £6\％ |  | $8{ }^{\circ} \mathrm{t}$ |  |
| 97S\＄ | 2\＄ | 10.0 | E6＊ | 76．0 | VWL projunt tI | $0^{\circ} \mathrm{E}$ |  |
| 97S\＄ | 62I\＄ | 10.0 | E6\％ | 76．0 | VWL projung $\dagger \mathrm{I}$ | L＇¢8I | 0I $\cap$ Sy 6¢IE |
| 97S\＄ | 6E\＄ | 10.0 | $\varepsilon 6.0$ | ＋6．0 | VWL proyunty $\dagger \mathrm{I}$ | 6.95 | カt GVSW／tゅ กSt 8\＆ZI |
| てEL＇ち\＄ | ¢ I\＄ | $60^{\circ} 0$ | 78．0 | E6．0 |  | t＇Z | ${ }^{\text {SIMPS }} \mathrm{qn}^{\text {d }}$ ¢ ${ }^{\text {¢ }}$ |
| てEL＇カ\＄ | てE\＄ | $60^{\circ} 0$ | t8 $8^{\circ}$ | £6\％ | VWL Se！̣甲セN عI | $\mathrm{I}^{\circ} \mathrm{S}$ |  |
| てEL＇t\＄ | 9\＆\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL SE！̣ヤセW ع | $L \cdot S$ |  |
| てعL＇t\＄ | 8L\＄ | $60^{\circ}$ | $78^{\circ} 0$ | E6\％ |  | ¢＇ZI |  |
| てEL＇カ\＄ | ¢¢\＄ | $60^{\circ} 0$ | t8 $8^{\circ}$ | E6．0 | VWL Se！̣甲セN عI | 68 | 6I TVSW／¢8 ПSપ \＆IZI |
| てEL＇t\＄ | 9\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL Se！̣ァセN عI | 0＇I |  |
| てعL＇t\＄ | 8IZ\＄ | 60.0 | $78^{\circ} 0$ | E6．0 | VWL Se！̣ァen $\mathcal{L I}$ | $0 \cdot \varsigma \varepsilon$ |  |
| てEL＇t\＄ | 62\＄ | $60^{\circ} 0$ | t8 0 | E6．0 | VWL SE！¢ヤ૨W عI | $9{ }^{\circ}$ |  |
| てEL＇t\＄ | $t$ ¢ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL SE！̣ヤ乛W عI | 9•8 |  |
| てEL＇t\＄ | LS\＄ | $60^{\circ} 0$ | $\downarrow 8^{\circ} 0$ | $\varepsilon 6.0$ | VWL SE！̣丁セN عI | I＇6 | đSつ эəqesoow z6ZI |
| てEL＇t\＄ | て0E\＄ | $60^{\circ} 0$ | t8 0 | E6．0 | VWL SE！̣欠セN عI | t－8t | LE TVSW／LE กSษ I |
| てEL＇t\＄ | $\varepsilon L \$$ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6.0$ | VWL SE！̣ヤセW عI | L＇II |  |
| てEL＇カ\＄ | It\＄ | $60^{\circ} 0$ | 78．0 | E6．0 | VWL SE！¢ヤ૨W عI | 9.9 |  |
| － | － | － | E6\％ | E6\％ | VWL ЧıIOMSIIG ZI | s＇tL | 七Z $\frac{1}{}$ |
| － | － | － | E6\％ | $\varepsilon 6.0$ | VWL чıомляIİ ZI | s＇てt |  |
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| － | － | － | $\varepsilon 6.0$ | E6．0 | VWL ¢ıIOMsIİ ZI | ガカI |  |
| － | － | － | E6．0 | £6\％ | VNL ¢ıIOMSIİ ZI | 601 | $\mathrm{SIM}^{\text {S }} \mathrm{qn}_{\mathrm{d}}$ K．uns 6SII |
| － | － | － | $\varepsilon 6^{\circ} 0$ | $\varepsilon 6.0$ |  | $9 \cdot \mathrm{I}$ |  |
| － | － | － | E6\％ | E6\％ | VWL чıIOMsIIG ZI | £．6I |  |
| ．әурвә $\mathbf{L}$ <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | วธียบบ | $\begin{gathered} \text { ұшәшцsn!py } \\ \text { ұиә... } \end{gathered}$ |  |  | ऽ．əчэъә $\mathbf{L}$ <br> GLI | OVS |


| てEL＇ャ\＄ | ¢0I\＄ | $60^{\circ} 0$ | t8 ${ }^{\circ}$ | $\varepsilon 6^{\circ} 0$ | VNL s！e［e］0z | 891 | łu！${ }_{\text {d }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| てEL＇ャ\＄ | ¢¢\＄ | $60^{\circ} 0$ | $78^{\circ} 0$ | $\varepsilon 6^{\circ}$ | VNL siele ${ }^{\text {der }}$ | 8.8 |  |
| てعL＇ャ\＄ | £S\＄ | 60.0 | 78．0 | $\varepsilon 6.0$ | VNL s！e［e］0z | ¢．8 |  |
| てEL＇ャ\＄ | ¢6\＄ | $60^{\circ} 0$ | 78．0 | $\varepsilon 6^{\circ} 0$ | VNLL s！eje］0z | て＇$¢$ |  |
| 629＇z\＄ | 0ZI\＄ | ¢0\％ | $88^{\circ} 0$ | E6\％ | VWL æ＞＞0u！II！${ }^{\text {－uloou！}}$ 6I | L＇もE |  |
| 6て9＇2\＄ | IE\＄ | ¢0 0 | $88^{\circ}$ | $\varepsilon 6.0$ |  | 6.8 |  |
| 629＇z\＄ | 09\＄ | ¢0 0 | $88^{\circ} 0$ | $\varepsilon 6.0$ | VWL æəขou！II！N－u | $\varepsilon \cdot L I$ |  |
| 089 ＇$¢ \$$ | LSES | L0 0 | $98^{\circ} 0$ | $\varepsilon 6^{\circ} 0$ |  | $s^{\prime}$＇LL | L9 ПSY ¢ 4 IE |
| IS0＇I\＄ | LI\＄－ | 20＇0－ | ¢6．0 | $\varepsilon 6^{\circ} 0$ |  | カてI | $0 \varepsilon$ TVSW／0\＆ 1 S |
| 09E＇L\＄ | 88E\＄ | ¢ ${ }^{\circ} 0$ | $98^{\circ} 0$ | 00＊I | VWL uet！iodonp losueg 8I | 0＊0t |  |
| E8L＇ऽ\＄ | t9¢\＄ | II 0 | $68^{\circ}$ | 00＇I | VWL uセt！！odonəN Joŝueg 8I | $0 \cdot$ L | t9 TVSW／t9 ПSt 8czI |
| E8L＇s\＄ | $9 \downarrow$ ¢ | LI0 | $68^{\circ} 0$ | 00＇I | VWL uセt！¢odonəN ．oŝueg 8I | カ・ $\dagger$ | £Z TVSW／L8 ПSU LIZI |
| \＆8L＇ऽ\＄ | Z8\＄ | II 0 | $68^{\circ} 0$ | 00＇I |  | 801 |  |
| $089{ }^{\text {＇}}$ \＄ | ¢ I\＄ | $L 0^{\circ} 0$ | E6\％ | 00＇I | VWL uet！！odonpw rosureg 8I | $0 \cdot \varepsilon$ |  |
| 089 ＇$¢ \$$ | 6E\＄ | L0．0 | $\varepsilon 6^{\circ} 0$ | 00＇I | VWL uセt！¢odonpN rosureg 8I | $0 \cdot 8$ |  |
| IS0＇I\＄ | 107\＄－ | 20．0－ | 20＇I | 00＇I | VWL uセt！¢odonpN ．oŝueg 8I | $0 \cdot \varsigma \downarrow$ I | てZ $\frac{\text { Sy }}{\text { LIZ\＆}}$ |
| ISO＇IS | てEI\＄－ | 20＇0－ | 20＇I | 00＇I | VWL uセt！！odonəon rosiurg 8I | 9＊¢6 | ャ¢ $\cap$ Sy ZLIE |
| IS0＇I\＄ | 88\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uセt！¢odonpN rosureg 8I | ャ®9 | 9 9 0 ¢ ILIE |
| IS0＇I\＄ | \＆Z\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uet！jodonəw rosiueg 8I | ¢91 | pu®⿺𠃊IS Ue！puI 0LZI |
| ISO＇IS | †¢\＄－ | $200^{-}$ | 20．I | 00．I | VWL uセt！¢odonəN roŝueg 8I | $06 \varepsilon$ | £9 TVSW／E9 กSt L¢ZI |
| IS0＇I\＄ | ¢IS－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uセt！jodonəN ．oŝueg 8I | 901 |  |
| ISO＇IS | LES－ | $200^{-}$ | 20＊I | 00＇I | VWL uセt！！odonp roŝueg 8I | L．9Z |  |
| LS0＇I\＄ | IE\＄－ | $200^{-}$ | 20＇I | 00＇I | VWL uセt！⿺odonəN roŝueg 8I | でで | SIM＇S qnd profl！w 90ll |
| IS0＇I\＄ | †01\＄－ | 20\％${ }^{-}$ | 20＇I | 00＇I | VWL uet！¢odonpW rosureg 8I |  |  |
| ISO＇I\＄ | ¢カ\＄－ | $20{ }^{-}$ | 20＇I | 00＇I | VWL uセt！odonpw rosfueg 8I | でてを | $\mathrm{SIL}^{\circ} \mathrm{S}$ qn $\mathrm{d}_{\text {umqurib E90I }}$ |
| LS0＇IS | て¢I\＄ | $200^{-}$ | 20．I | 00＇I | VWL uセt！¢odonp roŝueg 8I | 0 ¢6 |  |
| IS0＇IS＇ | 8てを\＄ | 20＊0－ | 20＇I | 00＇I | VWL uel！！odonpw rosureg 8I | I 2 ¢ | SIMPS qnd rosurg liol |
| t¢I＇$¢$ \＄ | てS\＄ | $90^{\circ}$ | ＋6．0 | 00． 1 | VWL uセt！¢odonəN roŝueg 8I | カてI | sI以＇S qnd urчрәの 9t0I |
| IS0＇I\＄ | I6I\＄ | 20＊0 | 76．0 | 96.0 | VWL ploystl d LI | 6． 2 EI | 6I ПSY ¢9IE |
| IS0＇IS | I $\angle \$$ | 200 | 76.0 | 96.0 | VWL ppysty！d LI | I＇IS |  |
| IS0＇I\＄ | L\＄ | 20.0 | เ6．0 | 96.0 | VWL ploysty！d LI | $\varepsilon \cdot \varsigma$ |  |
| 089＇ ¢ $^{-}$ | 0¢\＄ | L0 $0^{-}$ | E0＇I | 96.0 |  | ャ0I |  |
| 089＇E\＄ | IてZ\＄ | L0 $0^{-}$ | E0＇I | 96.0 | VWL иебәәчмоэS 9I | $9{ }^{\circ} \mathrm{S} \downarrow$ | 七L TVSW／七L＠S |
| ．әуэвә L <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | วธีบหบว | ұиәuュsn！py јuə．．．．n刀 |  |  | ऽ．əчэъә $\mathbf{L}$ <br> GLI | OVS |


| †¢I＇＇¢＇ | ZLS | $90^{\circ} 0^{-}$ | $66^{\circ} 0$ | E6＊0 |  | ＊＊ | £ย TVSW／\＆$\cap$ SU LZZI |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $t ¢ 1 \times{ }^{\text {¢ }}$－ | LてZ\＄ | $90^{\circ}{ }^{-}$ | $66^{\circ} 0$ | $\varepsilon 6.0$ |  | L＇tS | LZ OVSN IZZI |
| t¢I＇＇¢\＄－ | 26\＄－ | $90^{\circ}{ }^{-}$ | $66^{\circ} 0$ | E6\％ |  | でで |  |
| LLS＇I\＄ | 06I\＄ | E0\％ | $06^{\circ} 0$ | £6\％ | VWL | L＇16 | $6 \varepsilon$ กSy tLIE |
| LLS＇I\＄ | 8t\＄ | E0\％ | $06^{\circ} 0$ | $\varepsilon 6.0$ |  | $0 \cdot \varepsilon Z$ | Sャ TVSW／¢ヤ กSษ 6\＆ZI |
| LLS＇I\＄ | I $\angle \$$ | E0\％ | $06^{\circ} 0$ | E6\％ | $\forall$ WL | $0 \cdot \downarrow \mathcal{L}$ | ても TVSW／てヤ กSせ 9\＆ZI |
| LLS＇I\＄ | で\＄ | E0\％ | $06^{\circ}$ | E6．0 |  | $\varepsilon \cdot 0$ \％ | て\＆ TVSW／て\＆กSせ 9ZZI |
| LLS＇I\＄ | LL\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | 698 |  |
| LLS＇I\＄ | 6IZ\＄ | E0\％ | $06^{\circ}$ | E6\％ |  |  | I0 CVSW／6L ПSt 96II |
| LLS＇I\＄ | £Z\＄ | E0\％ | $06^{\circ}$ | E6\％ | VWL | $\varepsilon \cdot 1$ |  |
| LLS＇I\＄ | 01\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | $6{ }^{\circ}$ |  |
| LLS＇I\＄ | t9\＄ | E0\％ | $06^{\circ} 0$ | E6\％ |  | $L 0 \varepsilon$ |  |
| LLS＇I\＄ | 6\＆\＄ | E0\％ | $06^{\circ}$ | E6\％ |  | 0\％6I |  |
| LLS＇I\＄ | カ\＄ | E0\％ | $06^{\circ}$ | $\varepsilon 6.0$ |  | 8． 1 |  |
| 629＇2\＄ | ELIS | ${ }^{\text {c }}{ }^{\circ} 0$ | $88^{\circ} 0$ | E6＊ | VWL UOł［noh zZ | 0\％ 0 | 0S ПSY 66IE |
| 629＇て\＄ | 6II\＄ | ¢0 0 | $88^{\circ} 0$ | $\varepsilon 6^{\circ}$ | VWL บoł［noh zz |  | 0L GVSW／0L $\cap$ St z9zI |
| 629＇2\＄ | LLZ\＄ | ¢0\％ | $88^{\circ}$ | E6．0 | VWL บoł［noH zz | $0 \cdot 08$ | $6 乙$ dVSW／6Z กSせ をzZI |
| LLS＇I\＄－ | 87\＄－ | ع0＊ $0^{-}$ | 96.0 | $\mathcal{E} 60$ | VWL บoł［noh zz | $\varsigma^{\circ} \mathrm{E}$ I | ャI CVSW／ヶ8 ПS ${ }^{\text {d }}$ 80ZI |
| IS0＇IS | E9\＄－ | 20＇0－ | ¢6．0 | E6\％ |  | $8^{\circ} \mathrm{S}$ t | 89 dVSW／89 กSt I9ZI |
| ISO＇I\＄－ | L9\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6\％ |  | $L \cdot 8 t$ | It CVSW／It กSt ¢EZI |
| ISO＇IS－ | ¢¢\＄－ | 20＊${ }^{-}$ | ¢6．0 | E6\％ |  | $000 t$ | t0 CVSW／08 ПSt 86II |
| ISO＇IS－ | 97\＄－ | 20＇0－ | ¢6．0 | $\varepsilon 6.0$ |  | 0\％ 1 |  |
| 92S\＄ | tts | $10^{\circ} 0^{-}$ | ＋6．0 | $\varepsilon 6 \cdot 0$ | VWL サo．rxо ${ }_{\text {d－ıло }}$ İ | 0 ¢ 9 | $9 \downarrow$ TVSN 0ヵてI |
| LLS＇IS＇ | L\＄ | \＆0＇0－ | $96^{\circ} 0$ | $\varepsilon 6^{\circ}$ | VWL s！e［e］0z | $\varepsilon \cdot \varepsilon$ | GSD 2ofuey ${ }^{\text {Seg }}$ 88ZI |
| LLS＇IS－ | tて\＄－ | E0＊ $0^{-}$ | 96.0 | $\varepsilon 6.0$ | VNL SI¢［e］0Z | カ・I | d！̣sumol ue！pui ILZI |
| LLS＇IS－ | 61\＄－ | \＆0\％${ }^{-}$ | 96.0 | $\varepsilon 6^{\circ} 0$ | VWL siere 0 0z | $0 \cdot 6$ |  |
| LLS＇IS－ | L\＄ | ع0＊ $0^{-}$ | 96.0 | E6\％ | VNL s！erej 0 ¢ | $t^{\circ} \mathrm{E}$ |  |
| LLS＇IS－ | 0L\＄ | \＆ $0^{\circ} 0^{-}$ | 96.0 | E6\％ | VNL siele 0 0z | L＇$\varepsilon \varepsilon$ |  |
| LLS＇IS－ | てS\＄ | \＆ $0^{\circ} 0^{-}$ | 96.0 | E6\％ | VNL s！erej 0 ¢ | $8 \downarrow$－ |  |
| LLS＇I\＄ | 6\＄ | ع0＊${ }^{-}$ | 96.0 | E6\％ | VWL s！ele ${ }^{\text {cor }}$ | t＇t |  |
| ．әуръә L <br> ．⿰㇒⿻土一⿰⿷匚一亅⿱一𧰨刂灬 |  | วธบนบว | ュuәuцsn！py <br>  |  |  | $\begin{gathered} \text { s.əччвә } \mathbf{L} \\ \text { GLLI } \end{gathered}$ | OVS |


[^0]:    ${ }^{1}$ It should be noted that as the new $\$ 40,000$ minimum teacher salary is incrementally implemented as a result of recent legislation, the effect on lower salary areas will be the greatest. The current regional adjustments will not be adequate to provide the needed allocation at the lowest end of the range. The potential impacts of the minimum salary were explored in an addendum to MEPRI's 2019 review of salary matrices. If salary increases are targeted only at teachers below $\$ 40 \mathrm{~K}$ (without equal raises for higher-salary staff) then a floor of 0.90 should be sufficient to provide for the new minimum salaries even in the lowest salary areas. This is because the new floor would be applied to the total allocation, providing more than enough additional funding to provide raises for the proportion affected. However, it is unclear how the new minimum salary will impact salary schedules for all staff in future contract negotiations. Moreover, areas receiving above the floor will also be affected. Thus the salary matrices should be updated more frequently, taking new minimums into account. Ideally this analysis should inform the timeline for phasing out specific state subsidy relating to the new minimum salary, as some areas may need a longer ramp to absorb the impact of increased costs.

