

## New Hampshire Education Funding Simulator (Version 8)

The following document briefly describes the contents and functionality of the New Hampshire Education Funding Simulator (NHEFS) developed for the New Hampshire Commission to Study School Funding in conjunction with analysis results from the study AIR is conducting to examine the cost of providing an educational adequacy in New Hampshire public schools. The simulator is meant to be a tool for exploring different policy options for the funding of an adequate education through the development of funding formula and revenue generation scenarios. The simulator has been programmed in Microsoft Excel and consists of a series of linked worksheets containing results from the AIR cost analysis, data on student characteristics and funding for New Hampshire municipalities (towns), and information on statewide educational revenue streams. Below we describe the contents of the NHEFS as well as simple steps for performing simulations.

### Description of Simulator Worksheets

- **Simulator Variable List** – This worksheet contains a list of all town-level variables included in the “Town Cost Simulator” worksheet. In addition to the list of variables, we have provided a description of each variable and either documentation of its source or a description/definition of how it was calculated.
- **Smoothed Enrollment Weight** – This worksheet shows the calculations of smoothed enrollment weights using the splines discussed in the memo on eliminating district size “cliffs”.
- **Town Cost Simulator** – This is the main worksheet of the simulator. This worksheet includes several gold cells within which user-input decisions can be made that will change the results of the simulation. The user-input cells include the following:
  - a “Yes/No” dropdown list for deciding whether transportation funding should be included as part of the main formula or will be distributed separately outside of the main formula (cell C2);
  - a dropdown list for users to set whether they would like to use category-specific enrollment weights or a smoothed transformation of the recommended weights where there are no discontinuities in the enrollment funding adjustment from one category to the next (cell C3);
  - a dropdown list for users to set the assumed adequate outcome level to a specific percentile of the statewide distribution (cell C4) – the default specification selects the state average outcome level;

- an input cell for setting the assumed yearly percentage increase in funding (cell C7) – the cost model estimated by AIR suggests a yearly cost increase of 2.5%, which serves as the pre-populated default value;
- an option for users to input their own custom funding weights (cells C13 through C21) along with a dropdown list to select the custom weights or recommended weights (cell B11);
- an input cell for setting the minimum local contribution tax rate measured in terms of dollars per \$1,000 of assessed value (cell L9); and
- an input cell for setting the amount of state revenue raised for the funding of the formula outside of the statewide property tax (cell L18).

When users enter different options in the user input cells, the simulation results will change. The top panel of the simulator includes the user input as well as some statewide calculations of revenues and tax rates. The lower panel of the simulator includes a town-by-town breakdown of proposed formula funding including details regarding the calculation of funding, the town's actual state and local revenue, and property tax rates required for raising the simulated revenues for each town. This information is color coded with green cells representing town characteristics upon which simulated adequate cost/need for funding is based, blue cells representing simulated necessary funding for each town and their actual revenues, and pink cells showing simulated and actual taxes.

- **Co-op District Calculations** – This worksheet provides calculations for the additional tax rate necessary for cooperative districts. The “Town Cost Simulator” treats each town individually. In reality, towns in cooperative districts pool their revenue and contribute additional revenue through an apportionment formula. This worksheet simulates how additional revenue might be raised in cooperative districts to get districts back to their actual revenue levels based on cooperative district apportionment formulas and calculates a revised difference between simulated and actual education tax rates accounting for additional taxes that might be raised in districts that want to maintain current levels of state and local revenue.
- **Formula Funding Excerpt** – This is an excerpt of select variables from the full “Town Cost Simulator” for examining formula funding.
- **Revenue Excerpt** – This is an excerpt of select variables from the full “Town Cost Simulator” for examining revenue generation.
- **Formula Funding FRL Scatter** – A scatter plot examining the relationship of formula funding per pupil generated through the “Town Cost Simulator” and the free or reduced-price lunch percentages of towns.

## Simple Steps for Performing Simulations

### *Descriptions of User-Input Cells*

User input must first be provided in the gold cells of the “Town Cost Simulator” worksheet. We have password protected the simulator to allow users to only change the values in these input cells. The following is a description of the options and how these affect the simulations:

- **Is transportation included in the formula?** Selecting “Yes” for this option will include transportation funding in the main funding formula. In other words, the amount of funding distributed using the base and weights under this option is intended to cover district transportation costs as well as all other operational costs. Selecting “No” for this option will reduce the amount of funding distributed and will adjust the weights to account for the removal of transportation costs.
- **Use smoothed recommended enrollment weights?** Selecting “Yes” for this option will apply the smoothed enrollment weights calculated in the “Smoothed Enrollment Weight” worksheet. If this option is selected this will override the recommended categorical enrollment weights or the custom enrollment categorical weights specified in the weight input section.
- **Assumed Outcome Level (Percentile):** The default specification has this set to the existing state average outcome level. In other words, this is the amount of funding that is intended to allow all students the opportunity to achieve at the existing state average achievement level. Changing this to a higher outcome level (e.g., the 70<sup>th</sup> percentile), will increase the amount of funding distributed through the formula in order to attain the higher outcome level. Our cost model indicates that a one standard deviation increase in outcome (moving from the existing state average to just under the 85<sup>th</sup> percentile) would require almost 18% more funding to cover the cost.
- **Assumed Yearly Percentage Increase in Funding:** Because the data for the cost model only goes through the 2018–19 school year, we inflate the 2018–19 base to 2019–20 level by applying an average yearly percentage increase. This also demonstrates how the formula would be updated on a yearly basis to account for necessary increases in education cost over time to maintain existing achievement levels. The cost model estimates suggest using a 2.5% yearly increase in funding.
- **Use recommended weights or custom weights?** This option allows users to toggle between the recommended weights and the custom specified weights.
- **Custom Weights:** This panel allows users to specify their own custom weights that differ from the “Recommended Weights” generated through the AIR cost analysis.

- **Minimum Local Contribution (per \$1,000 of assessed value):** This option allows users to specify the local education property tax rate that would contribute to the funding of the target formula funding amount. In other words, specifying something other than \$0 for this option will result in a shared responsibility for generating revenue for the funding formula between municipalities and the state. A larger minimum local contribution will increase the percentage covered by municipalities and decrease the state’s funding obligation. If towns can raise the more than the proposed formula funding amount at the user-input minimum local contribution, the tool will automatically set their simulated minimum local education property tax rates to levels that allow them to raise the exact amount of the proposed formula funding. The pre-populated default value for the minimum local contribution is set at \$5.00.
- **Non-SWEPT Education Trust Fund Appropriations:** This represents the amount of revenue that the state will contribute to funding the state obligation outside of the statewide education property tax. The pre-populated default amount is set to approximately \$602 million, which was the amount of non-property tax revenue in FY 2019. Increasing this amount will decrease the amount of revenue needed from a statewide education property tax and resulting property tax rates.

### ***Explanation of Simulation Results***

After user input is specified, review the simulation results by examining the calculated variables in the relevant spreadsheets.

- In the main “Town Cost Simulator” sheet, columns B through U show variables that are relevant for the calculation of a weighted ADM; columns V through Y show the calculated simulated formula funding amounts alongside the actual state and local revenue amounts for comparison; columns Z through AK show the calculated tax rates and comparisons to actual tax rates. Because there are a large number of columns, the “Town Cost Simulator” can become unwieldy. We have therefore grouped the weighted ADM columns (B through U) so that users can collapse and expand those columns using the minus or plus sign above column V.
- We have also excerpted portions of the town cost simulator as separate Excel worksheets (“Formula Funding Excerpt” and “Revenue Excerpt”) to allow for viewing a smaller set of variables related to formula funding or revenue, respectively. The values of these excerpts update according to the user-input decisions made on the Town Cost Simulator worksheet.
- Within the “Town Cost Simulator” and “Excerpt” worksheets, users are able to use the Excel sorting and filtering functions. This will allow users to sort towns according to variables of interest or select specific towns of interest for comparison. To make use of this

functionality, simply click on the boxed arrow in the bottom righthand corner of the column heading cells.

- In the final tab of the simulator workbook, we have included a scatter chart that shows the relationship between town funding levels and percentage of free or reduced-price lunch. As discussed in the AIR briefs, progressiveness (or the degree to which the relationship between funding and levels of economic disadvantage is positive) is a key indicator of student equity. This chart will allow users to examine how changes in user inputs (specifically weights) alter the progressiveness of funding. The scatter plot is also a concise way to view the overall range and variation in funding levels across towns.