

# Financial Modernization and Risk Analysis (MARA) Study: K-12 Education Module Summary

## MARA Study Overview

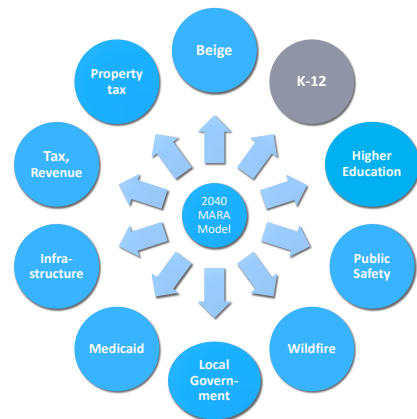
As directed by HB 330, the Financial Modernization and Risk Analysis Committee (MARA) has undertaken a study of the long-term financial needs of the state and local governments, while considering changes in demographics, technology, and the economy. The MARA forecasting model is based on econometric data and identifies future financial risks to the state’s revenues and expenditures, as well as considering impacts on local governments’ revenues and expenditures. The MARA committee relies on a **data-driven approach to identify potential financial concerns for the state and local governments**. This approach has a **medium- to long-term time focus, from present to 2040**.

**Key Takeaways: MARA K-12 Education Module**

- Currently, this is a work in progress and the takeaways are in flux
- Analysis of the model and tinkering with the forecast continues

## MARA K-12 Education Module Overview

The 2040 MARA model is broken into “modules”. The modules reflect different aspects of the revenues and expenditures of state government, local government, and school districts. The diagram at left shows the expenditure components in blue. K-12 education expenditures will be developed in the education module. The education expenditures module includes programs like K-12 education including School for the Deaf and Blind, and other programs.



## MARA K-12 Education Module – Data Sources

Data for the K-12 education module is sourced from the Montana Office of Public Instruction database of School Trustees Reports and historical enrollment of schools in Montana, IHS Markit forecasts of price indices and school age population, Regional Economic Models Inc. (REMI) forecast of school-age population, and property tax collections data from the Department of Revenue.

## MARA K-12 Education Module – Assumptions and Methodology

### **Expenditures**

K-12 expenditures will be broken into five main categories which correlate to subcategories using the U.S. Census codes. The following categories were used for modeling purposes:

- General education – all costs not articulated below
- Transportation – Census codes V45 Student Transportation, plus K10 Other Equipment with function code Student Transportation Services
- School Foods – Census codes E11 Food Services or 31XX function code Food Services
- Building infrastructure – Census codes F12 Construction, G15 Purchase of Land, and I86 Interest which ties to trustees reports functions Capital Leases or Long-Term Notes with Board of Investments;

Facilities Acquisition and Construction Services, General Obligation Bonds, Special Assessments, and Interest; and Interest on Registered Warrants

- Adult education – not included in Census K12 education expected in local government education

The calculations will be done by school district to capture the individual preferences and resources of districts.

The forecast for school enrollments will proportionally allocate the IHS Markit or REMI forecast by county based on recent years' enrollment (omitting FY 2021 due to pandemic anomalies) relative to county school-age populations.

The price index used is Consumer Price Index for all Urban Users (CPI – U) and the IHS Markit forecast for CPI-U through 2033, then the module uses a five-year compound annual growth rate from 2033 to 2040 to assume the inflation rate after 2033 is trended consistently.

**MARA K-12 Education Module: Except for infrastructure, the forecast by school will represent the historical relationship between school age population and inflation with actual expenditures by district.**

- School age population
- Inflation
- Actual expenditures

School district costs are forecast based on the historic costs from FY 2001 through FY 2019, enrollment by district, and the price index.

Changes in law in the past will be included as part of the overall trends in the forecast. Inherently some policy changes will be included in the forecast. If there are additional known changes in law, they will be included in the forecast. However, there are no law changes currently included in the model. For example, new federal law related to school food allows all students to participate in school breakfasts and lunches.

Transportation costs are segregated to isolate the costs and funding by district.

School infrastructure costs will be calculated two ways: 1) based on the size of the district and the costs for providing space for a specified number of students based on national statistics of size estimates and infrastructure cost estimates, and 2) district-specific costs trended forward like other expenditures. For more information see the infrastructure module.

## **Funding**

Funding will be allocated with the same share of all costs as the funding in FY 2021 for each fund. This will crosswalk the costs developed by fund with the revenue sources for each fund. It will assume the same proportion of funding by source of revenue. If needed these proportions will be adjusted due to changes in law. While not yet coded, a change in the forecast funding to account for increases in state guaranteed tax base (GTB) will need to account for the \$10 million increase in GTB aid added in the 2021 Session.

Funding will be grouped into the following for summary purposes: state; state oil and gas; district property taxes; other local revenues; county and state revenue for retirement fund; federal; tuition, fees and other; transfers and funds from other districts; and other local.

## **Revenue**

Summaries of the revenues needed as determined by the funding analysis will be reported by type of revenue. Revenue availability compared to revenue needs will also be reported and any areas of concern will be reported. This comparison will not be available until the October model update.

### **State Funding**

State funding that is derived from non-oil and gas revenue will roll up to a needed value for state revenue. State revenue will have the guarantee account state special revenue fund as the first source of revenue with general fund filling in the remaining requirement.

Oil and gas revenues to school districts will be recorded as state payments to school districts. Analysis of any shortages in oil and gas revenue needs to be done and replaced by either local levies or state GTB aid, whichever is appropriate for the situation.

### **Federal Funding**

The federal funding calculated to be needed will be reported and evaluated at a state level with all other federal sources of revenue. There is a risk that federal funding could diminish or increase over time and the risk would affect K-12 funding as well as state and local funding of services.

### **Property Taxes**

The amount of property tax needed by school district will be reported in June. The analysis of the anticipated impact on property taxes will not be available until the October model update.

#### Taxable value by class by county

Taxable value will be forecast based on the trend in population, CPI, and other factors by class and by county. This trend will be applied to all taxing jurisdictions in each county.

#### Property taxes paid by school district, city, county, special districts, and state taxing jurisdictions

The calculated funding need for school districts, cities, counties, or special districts in the various modules will be used to determine the taxes paid and mill levy requirements in each taxing jurisdiction. Calculated state mills based on statute will be added to these local mills. Mill levies will be applied to each class of property to determine the collections by class for each type of jurisdiction. Communication tools will allow users to see changes at approximately the taxpayer level. Note that special district levies will usually be applied to all taxpayers in the county as a levy shape file is not available.

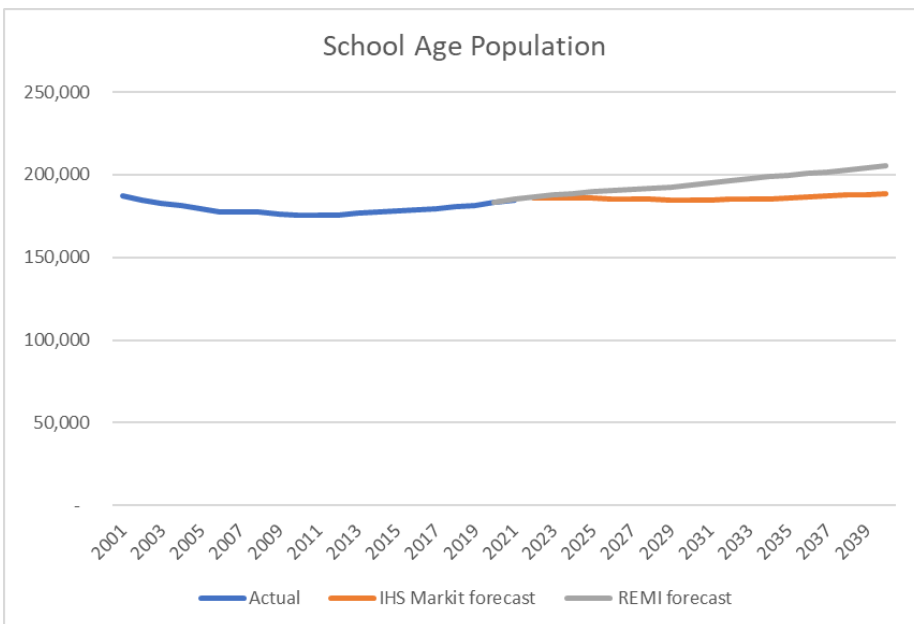
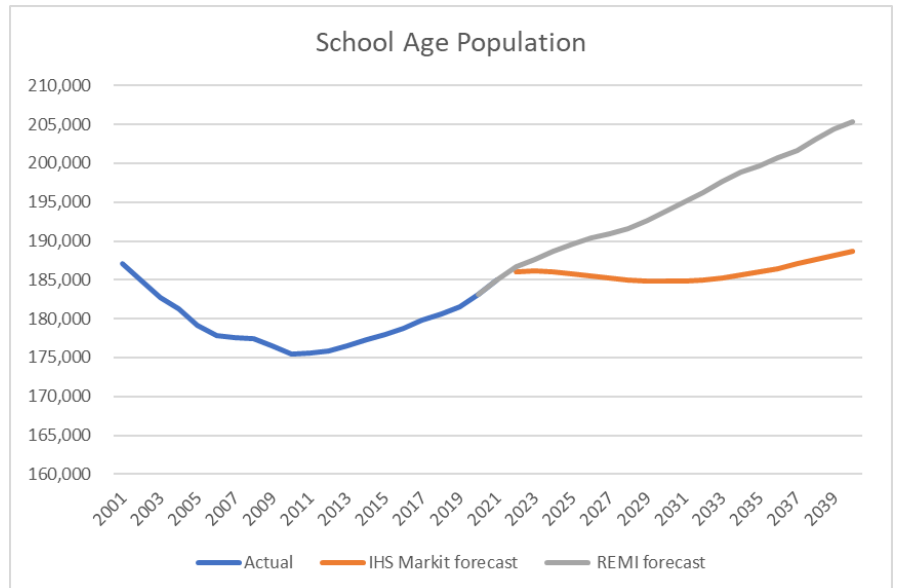
#### MARA K-12 Education Module – Stakeholder Awareness and Participation

The Legislative Fiscal Analyst met with members of the Montana School Association for a full day meeting that discussed the 2027 K-12 vision project and new developments that impact the core purpose of Montana schools. The group learned about the K-12 module components and purpose of the 2040 model. Shareholders asked questions and invited our staff to listen to the planned goals for student success, governance, culture, teaching, and community engagement.

Additional meetings with school finance experts and public finance are being held to get input on the model techniques and analysis.

MARA K-12 Education Module – Findings

School-age population changes – the graphic below illustrates the decline in school-age population from FY 2001 to FY 2012 and the increase in population after that point. After current enrollments, the model uses one of two forecasts (both will be updated prior to completion of this project). IHS Markit shows a slight decline in school-age population followed by a slight increase. REMI forecasts higher Montana populations in general and likewise higher population increases in school-age population.



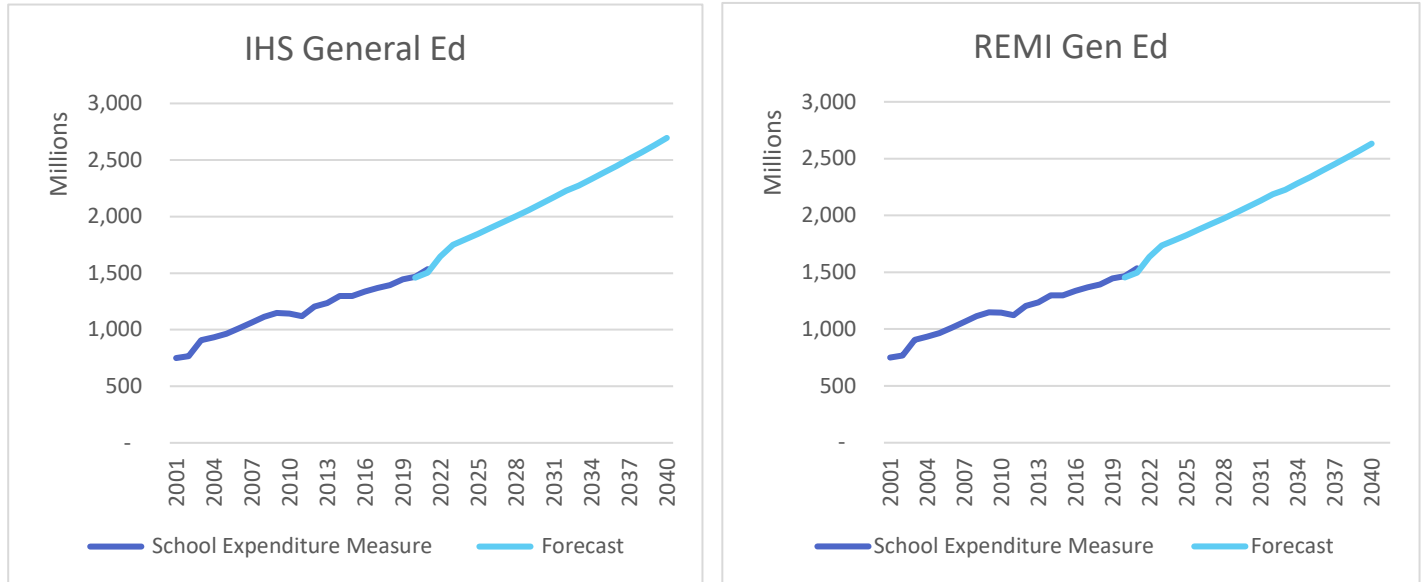
The adjacent graphic illustrates the same information with the axis set at zero to show the relative differences in growth of past enrollments and the future projection. While the differences are substantial as shown above, they also reflect a relatively stable school-age population in both forecasts.

Forecast results of the four groupings of costs

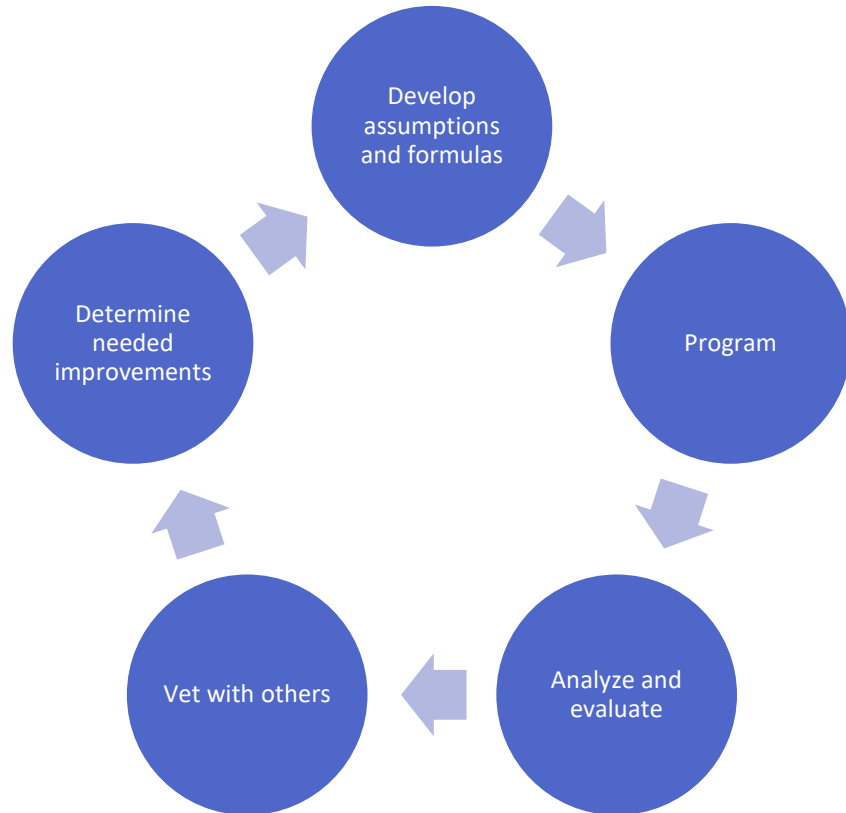
All values in this section of the report are current with the model as of Monday, June 20th. Continued work will change these values and analysis.

*General Education*

General education is the largest grouping of expenditures for schools. The two graphics below illustrate the analysis as it was on Monday, June 20<sup>th</sup>. The graphics illustrate a technical issue within the model.



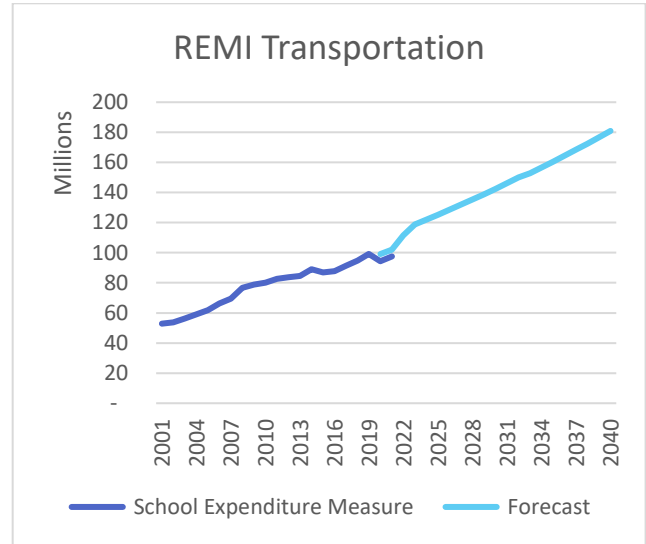
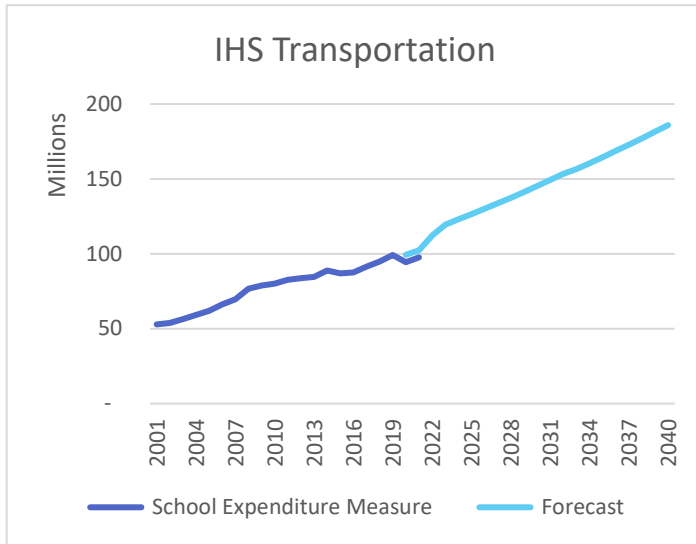
Although REMI populations are larger than IHS Markit population forecasts, especially for school age children, the forecasted school expenditures are currently smaller under the REMI scenario than the IHS scenario. This is the result of a [collinearity](#) statistical phenomenon. This was discovered on June 20 and will be addressed in the next version of the model. It also illustrates the process of modeling and the importance of analysis, evaluation and vetting within the process.



The graphic to the right describes the process. As the process continues, points in time when the results are shared publicly are noted.

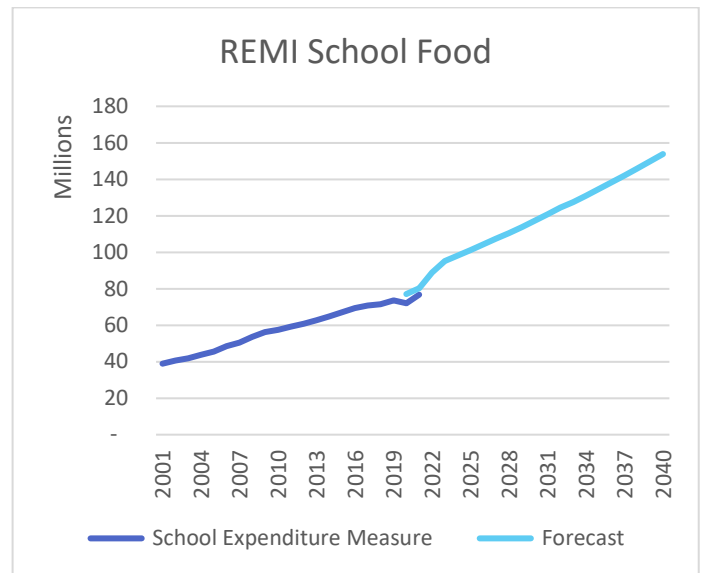
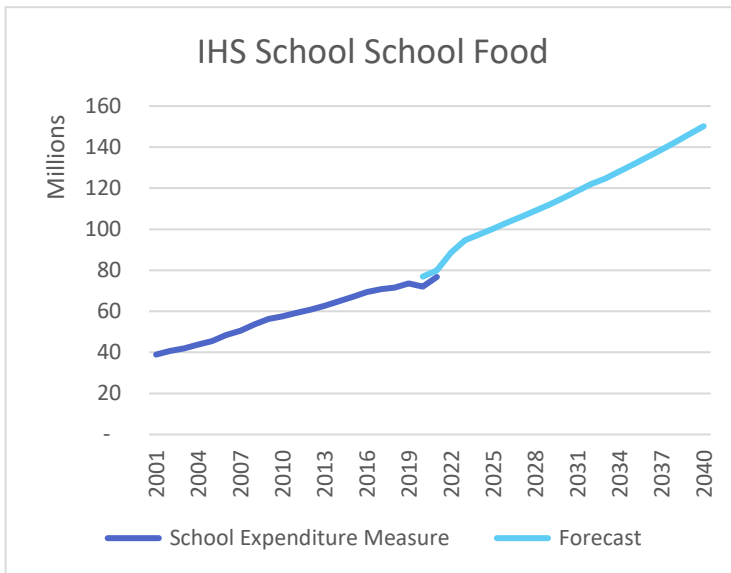
### Transportation

Transportation in this round of modeling also illustrates the collinearity statistical phenomenon that will be addressed in the next round of modeling.



### School Food

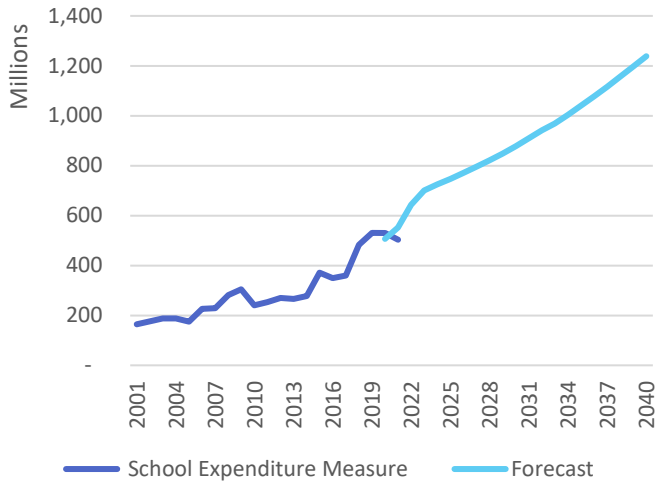
School food in this round of modeling does not illustrate the collinearity statistical phenomenon.



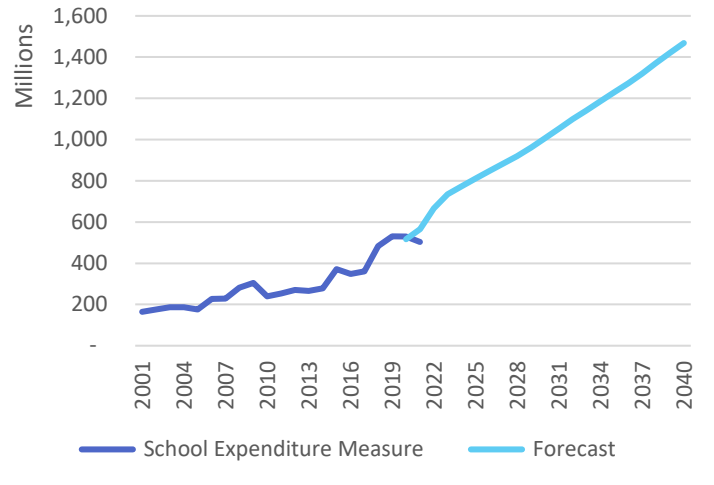
### Trended Building Capital Outlay

Building Capital Outlay in this round of modeling does not illustrate the collinearity statistical phenomenon. It does however demonstrate the weakness in this type of modeling for use with building capital outlay. Given recent investments in school buildings, recent data appears to be skewing the costs for buildings higher than may be needed. The infrastructure modeling technique described in the infrastructure module will be an alternative to the trended forecast.

### IHS Building - Buildings



### REMI Buildings

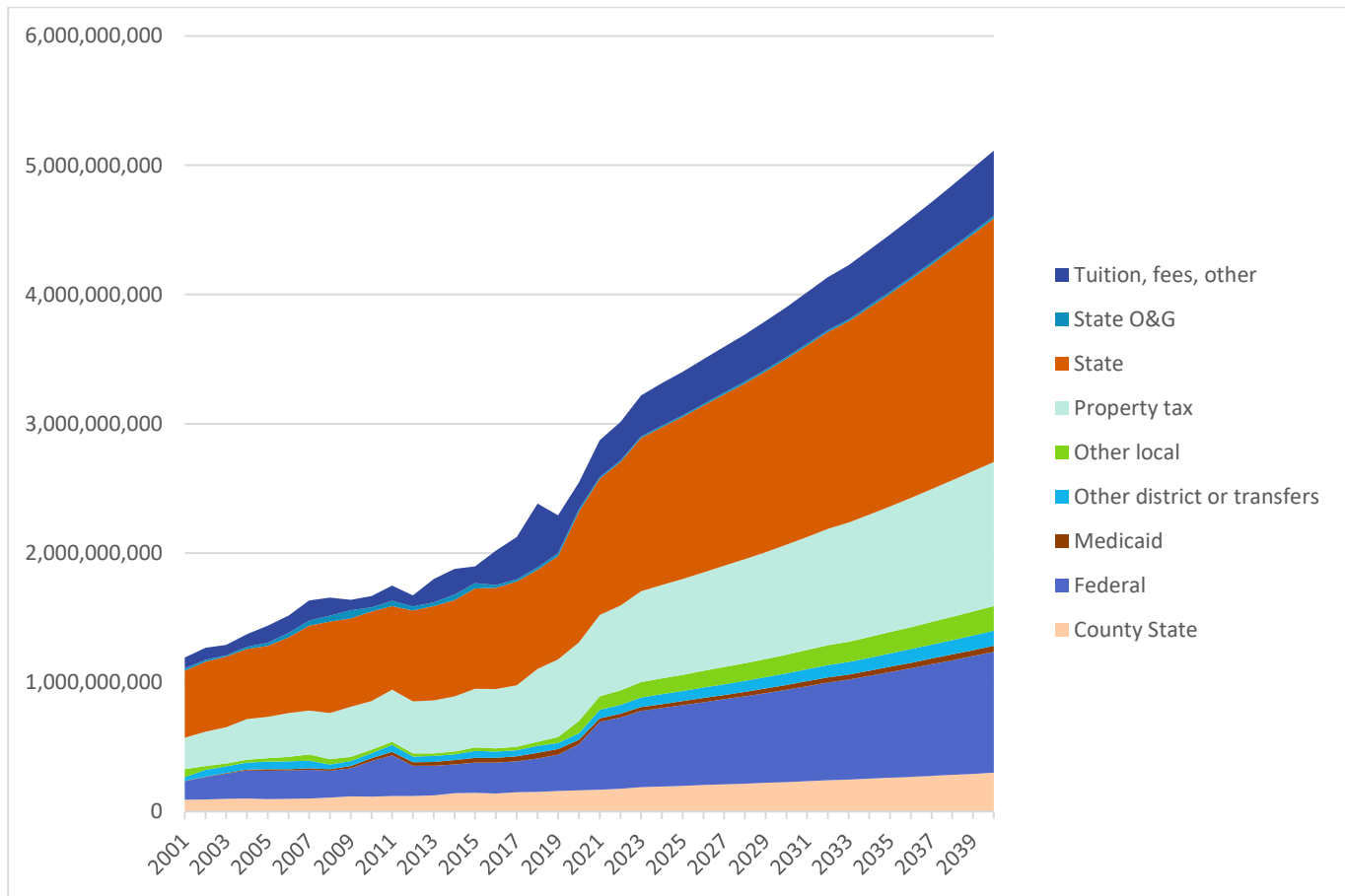


## Conversion to Funding

The following graphics illustrate the funding outcomes of the June 20<sup>th</sup> model.

### *All funds*

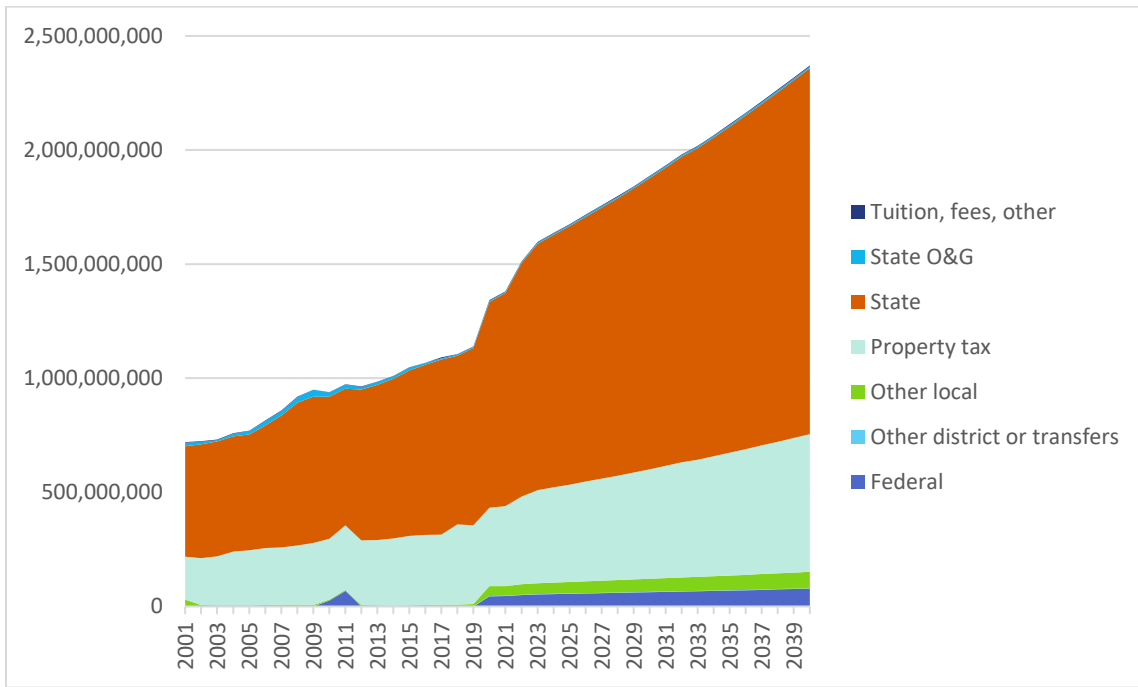
All funds of districts are combined into this graphic and demonstrate the relative reliance of various funds anticipated in the June 20<sup>th</sup> model. At this level, no anomalies are noticed.



### *School district general fund expenditure funding*

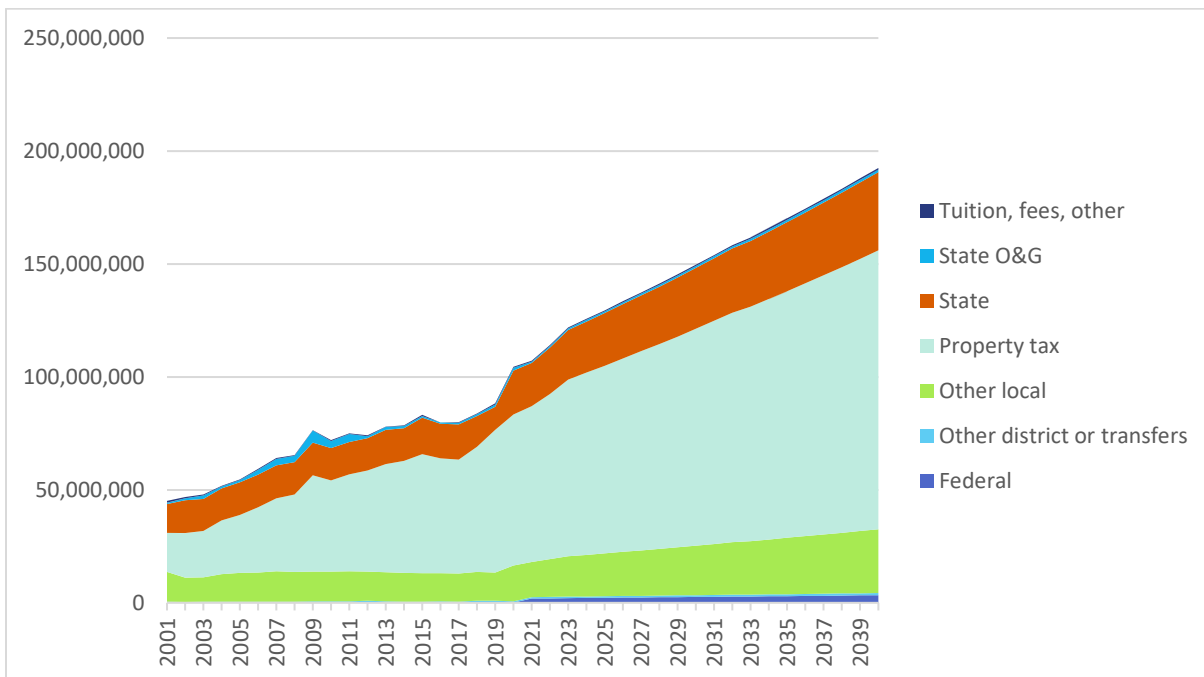
The following graphic shows the funding of district general fund expenditures from the model with the calculations and assumptions shown on pages 2 and 3. An anomaly found in this graphic is the federal funding appearing in the general fund and how the model is capturing and continuing federal funds in the general fund. School district general fund budgets do not typically receive federal funds. Due to current unusual circumstances, these funds are getting modeled into future budgets. The next version of the model will correct this anomaly.





*Transportation Funding*

The following graphic shows the funding for district transportation budgets. The same anomaly with federal funds is apparent in this graphic as well as the district general fund budgets above and will be addressed in the next version of the model.



MARA K-12 Education Module – Limitations

Limitations include the reliance on the various sources of data and forecasts, as well as changes in the preference for public or private education.