MARA Model

INVENTION WITH INTENTION

TIMING
HB 330  MARA Charge

(a) identifying structural revenue challenges with economic, demographic, and geographical variability considerations;

(b) exploring revenue sufficiency and probable long-term expenditures by state and local government...

(c) creating data sets and models for future analysis by the legislature; and

(d) proposing potential solutions and possible legislation for consideration by the 2023 legislature
Progress to Date

Speakers on various topics
- How technology will impact the future economy
- Population and demographic trends supported by data
- Potential changes to the energy economy supported by data
- Change in education, health, land use, property tax, and other topics
- Cost of living trends including housing and childcare
- Data on various topics were presented

Model planning has been underway, but not brought to the committee till now
2040 MARA MODEL

**IS**

- Tool to provide insights to the future
- Pinch points
- Values in context
  - Example how big of a problem shortfalls in gas tax be in comparison to shortfall in capacity at the state prison

**IS NOT**

- Not a precise calculation of revenues or costs in the future
- Not tell the legislature what it should do
- Not a budget
# Outlook versus MARA Model

<table>
<thead>
<tr>
<th>OUTLOOK</th>
<th>2040 MARA MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 years out</td>
<td>18 years out</td>
</tr>
<tr>
<td>Relatively detailed</td>
<td>Less detail but covers all state, local &amp; schools</td>
</tr>
<tr>
<td>Focused on state general fund</td>
<td>Considers more global trends</td>
</tr>
<tr>
<td>Focused on present law, but also introduces</td>
<td>Considers items beyond present law in order</td>
</tr>
<tr>
<td>expenditure pressures</td>
<td>to capture demands anticipated with the new</td>
</tr>
<tr>
<td>Primarily internal LFD work, with relatively</td>
<td>economy and other trends</td>
</tr>
<tr>
<td>little outside input</td>
<td>Looped through various committees and stakeholders for input</td>
</tr>
</tbody>
</table>
Outlook 2025/2027 is more detailed

The recent Pew memo offers state lawmakers six fiscal principles to follow when constructing a long-term budget:

Analyzing major revenue sources and spending categories.

Looking ahead at least three years.

Estimating baseline revenue and spending, using “present law” and “current services” approaches to anticipate the amount of funding needed to maintain consistent service levels for programs in future years.

Accounting for the effects of potential policy changes.

Distinguishing between one-time and ongoing revenue and expenditures to estimate structural balance.

Identifying the key factors driving the state’s structural position.
M - Modular – include modules of significant revenue and cost drivers of state and local policy and financial areas

I - Inclusive – open communication with legislative committees, local governments, stakeholders, and experts

D - Data-driven forecasting – data from State Accounting Budget & Human Resource System (SABHRS) for state and local, IHS Markit, Regional Economic Models Inc. (REMI) population, K-12 education, Department of Revenue, others

I - Insightful - Uses and considers advances in technology, modern consumer preferences, population

L - Long-term outlook – looking forward from present to 2040
The 2040 MARA Model is a modular approach to public services, focusing on Education, Public Safety, Public Works, Property tax, Tax and revenue, and Infrastructure. Each component is interlinked, indicating a comprehensive and interconnected system for public services and revenue generation.
INCLUSIVE – Vetting all aspects

Stakeholders
Legislative Committees
Agencies
Budget Office
Local Governments, including schools
Experts in complex modeling and experts in analysis – Pew
Public
DATA DRIVEN – primary data sets

Accounting data - state SABHRS, local reports to DOA and school reports to OPI

IHS Markit economic forecasting data that includes labor, population, inflation, and many others

Department of Revenue and Justice tax, including detailed property tax data

REMI population forecasts by county

IHS Markit, NW Power Planning, Princeton Net Zero America for scenarios of the energy economy

System Actuarial reports for pension assumptions

Census definitions for state, local, and school accounting data

Other federal and state data sets
INSIGHTFUL
The input from all the speakers over the past year
Input from all stakeholders, legislators, agencies, experts
Develop trended costs and revenues
As time allows – model more details and scenarios
## Scenarios impacting global variables

<table>
<thead>
<tr>
<th>Energy economy</th>
<th>Population growth</th>
<th>Pension Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>• IHS Markit</td>
<td>• IHS Markit</td>
<td>• Current law</td>
</tr>
<tr>
<td>• NW Power and Conservation Council Power Plan</td>
<td>• Alternate IHS Markit</td>
<td>• Shorter amortization at higher rate, from system actuarial analysis</td>
</tr>
<tr>
<td>• Princeton Net Zero America alternate energy options</td>
<td>• REMI</td>
<td></td>
</tr>
</tbody>
</table>


Global Variables that are used to model the future

Green are dynamic and changes with various scenarios, these are examples, there will be additional variables.

Gray, automation, is not dynamic and it is uncertain if we will find a way to incorporate this element.
Model Process

**Data**
- IHS Markit
- Accounting data
- Other

**Scenarios**
- Reference
- Energy
- Population
- Pensions

**Global Variables**
- Population
- Economy

**Modeled Output**
- Income tax $
- Property tax $
- Expenditures $
LONG-TERM to 2040
Reference Case
Revenue and Expenditure

The future is unknown
Reference case and multiple scenarios
More about the model and how it will work
Modules
Medicaid
Example: Health

Medicaid Cost in a given Year = Number of Participants in that year × Cost Per Participant in that Year
### Medicaid Population Groups

- Adult
- Child
- Disabled
- Over 65
- Adult Expansion

### Percentage of Population

- % Adult
- % Child
- % Disabled
- % Over 65
- % Adult Expansion

### Example: Health

<table>
<thead>
<tr>
<th>Medicaid Population Groups</th>
<th>Percentage of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>% Adult</td>
</tr>
<tr>
<td>Child</td>
<td>% Child</td>
</tr>
<tr>
<td>Disabled</td>
<td>% Disabled</td>
</tr>
<tr>
<td>Over 65</td>
<td>% Over 65</td>
</tr>
<tr>
<td>Adult Expansion</td>
<td>% Adult Expansion</td>
</tr>
</tbody>
</table>

**Number of Participants in that year**
Example: Health

Percentage of Population:
- % Adult
- % Child
- % Disabled
- % Over 65
- % Adult Expansion

Forecasted Population:
- Adult
- Child
- Disabled
- Over 65
- Adult Expansion

Number of Participants in that year
Example: Health

Number of Participants in that year
Example: Health

Medicaid Cost in a given Year = Number of Participants in that year × Cost Per Participant in that Year
Example: Health

Medicaid Cost

- $ Per Adult
- $ Per Child
- $ Per Disabled
- $ Per Over 65
- $ Per Adult Expansion

Cost Per Participant in that Year

CMS.gov
Centers for Medicare & Medicaid Services

Projected

The Office of the Actuary in the Centers for Medicare & Medicaid Services annually produces projections of health care spending for categories within the National Health Expenditure Accounts, which track health spending by source of funds (for example, private health insurance, Medicare, Medicaid, by type of service (hospital, physicians, prescription drugs, etc.), and by sponsor (Businesses, households, governments). The latest projections begin after the latest historical year (2018) and go through 2028. These projections do not take into account the impacts of COVID-19 because of the timing of the report and the highly uncertain nature of the pandemic.

Downloads
- NHE Projections 2019-2028 - Tables (ZIP)
- NHE Historical and Projections, 1960-2028 (ZIP)
- NHE Projections 2019-2028 - Forecast Summary (PDF)
- Accuracy analysis of the short-term (10-year) national health expenditure projections (PDF)
- Projections Methodology (PDF)
- NHE Projections 2019-2027 - Tables (ZIP)
- National Health Expenditure Projections 2019-20 (PDF)
Example: Health

Medicaid Cost in a given Year \[=\] Number of Participants in that year \[\times\] Cost Per Participant in that Year
Input and Feedback

- Committees
- Agencies
- OBPP
- Stakeholders
- Contractors
Forecast Modules

Modeling

Attach to Financial Data
Business Intelligence Software

- Link Data Sets
Business Intelligence Software

- Link Data Sets
- Time
Business Intelligence Software

- Link Data Sets
- Time
- Location
Business Intelligence Software

- Link Data Sets
- Time
- Location
- Regular Updates

**Accounting data from SABHRS**
- Nightly

**IHS Markit economic forecasting data**
- Monthly

**Department of Revenue Property Tax Data**
- Annually

**REMI population forecasts by county**
- Biannually
Business Intelligence Software

- Link Data Sets
- Time
- Location
- Regular Updates
- Visualize
- Modules
- Roll Up
Business Intelligence Software

- Link Data Sets
- Time
- Location
- Regular Updates
- Visualize
- Modules
- Roll Up
- Define Variables
- Modular
- Global
Population
Demographic Age Change
Scenarios
Forecast

Modules

Modeling

Attach to

Financial Data
Financial Data Sets

1. State Accounting Data (SABHRS)
2. School Accounting Data (Trustee Reports)
3. Local Government Accounting Data (Financial Reports)
LEGISLATIVE BRANCH

TOTAL APPROPRIATION AUTHORITY

The total appropriation authority for the agency is shown in the pie chart below. HB 2 and HB 13 provide 77.0% of the total authority for this agency. All types of appropriation authority for this agency are described below, including total budget and the percent expended by source of authority.

Modified Budget and Expended Budget by Source of Authority

<table>
<thead>
<tr>
<th>Source of Authority</th>
<th>Modified Budget</th>
<th>Expended Budget</th>
<th>Percent Expended</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB2 &amp; HB13</td>
<td>21,307,495</td>
<td>11,482,066</td>
<td>53.6%</td>
</tr>
<tr>
<td>CF Carryforward</td>
<td>454,749</td>
<td>14,643</td>
<td>3.2%</td>
</tr>
<tr>
<td>Other House or Senate Bill</td>
<td>5,726,173</td>
<td>1,536,606</td>
<td>28.8%</td>
</tr>
<tr>
<td>ARPA</td>
<td>200,000</td>
<td>55,999</td>
<td>28.6%</td>
</tr>
<tr>
<td>Total</td>
<td>27,688,417</td>
<td>13,089,304</td>
<td>47.3%</td>
</tr>
</tbody>
</table>

Report Period

- Jul
- Aug
- Sep
- Oct
- Nov
- Dec
- Jan
- Feb

STATE ACCOUNTING DATA
SABHRS Breakout Example

SABHRS Data

- Medicaid
- Other Modules
- All Else
SABHRS Breakout Example

- SABHRS Data
  - Medicaid
  - Other Modules
  - All Else

History
Pulling it Together

Forecast Modules

Modeling

History

= Financial Forecast
Reference Case

Scenarios

Discussion

In The End
Process and Next Steps

AMY CARLSON
Anticipated MARA meetings

- **Late April**
  - Late April - 1 day
  - Health wrap up
  - Property tax model look back
  - 20 year look back

- **June**
  - June 23 or 24
  - First draft of model and property tax look forward
  - Committee discussion

- **September**
  - Early September - 1 day
  - Final draft of model
  - Committee discussion

- **October**
  - Early October – 1 or 2 days
  - Final model
  - Legislation of Interim Committees
  - Final committee discussion
Late April

Property tax model look back for long-term understanding of the property tax system.

Health industry wrap up

Past expenditure and revenue review
June

First draft of model
  Preliminary findings
  Communication tools
  Next steps

Committee discussion
Early September

Draft of model
Draft findings
Insights and observations from outside groups
Next steps

Committee discussion
Early October

Final Model 2022
- Communication tools for the legislature
- Recommended future study

Interim Committee Legislation
Committee discussion
Next steps
Product and Process – outside MARA

March & April
Describe plan, ask for insights from stakeholders, legislators, others
Model

May & June
Finish draft model
Develop communication tools

June & July
Vet model and assumptions with stakeholders, legislators, experts and others

August & Sept
Final draft of the model
Vet

Sept & October
Finalize model and communication tools
End
Census Crosswalk – State, Local, and Schools

Not Census data, but Census and other types of groupings of revenue and expenditure

Decades of experience in understanding how state and local government finance should be considered together

Eliminates duplicates so that transfers between government entities do not get captured multiple times – major time and credibility saver
Census Crosswalk - example

Local Government Expenditures

Census Category 1
- SABHRS data expenditure group A

Census Category 2
- SABHRS data expenditure group B

Census Category 2
- SABHRS data expenditure group C