FY 2021 RECOMMENDATIONS OF THE IRFC

Statutory Report to the Cook County Board of Commissioners

8/31/2020

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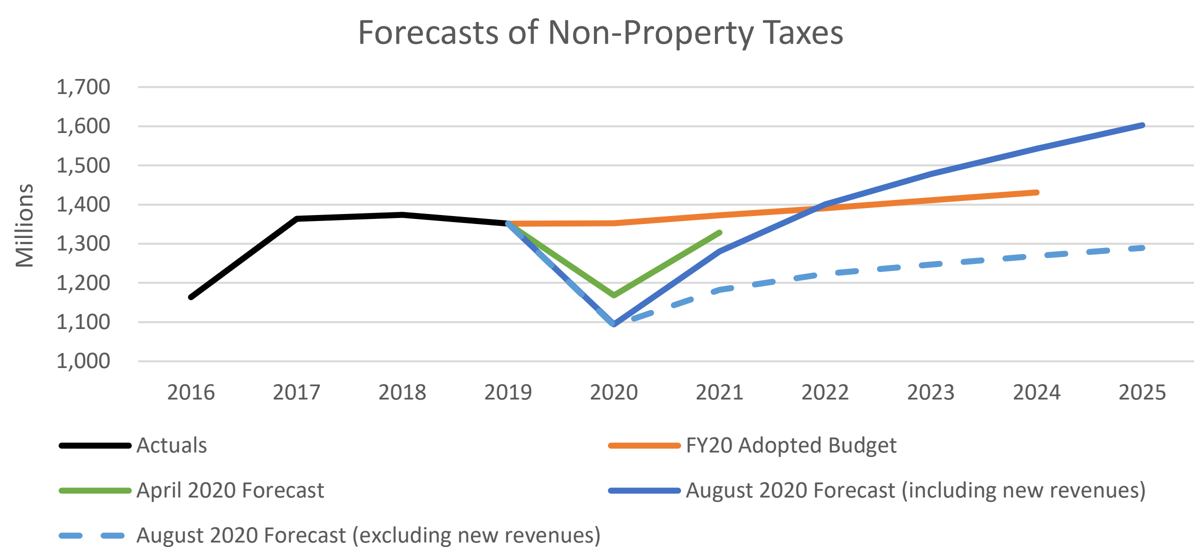
COOK COUNTY
GOVERNMENT
Bureau of Finance

Introduction

Cook County's finances, like those of other governments across the country, have been battered by the twin crises of the COVID-19 pandemic and subsequent economic contraction and disruptions. The County's adopted budget for FY 2020 included $1,352.2 million in non-property tax revenues. By the IRFC's April 2020 meeting, the County estimated those revenues would come in at $1,168.2 million. Further downward revisions leave the County looking at an estimated $1,094.2 million in non-property tax revenues for FY2020.

The outlook for FY2021 and following years has also deteriorated considerably since November 2019, when the County Board adopted its FY 2020 budget. The most recent figures (August 31 Summary pdf provided by the County) point to a rebound in FY 2021 followed by modest growth through FY 2025. The graph below shows that non-property tax revenues are estimated to be just shy of $1.3 billion by FY 2025, once we adjust for "new" revenues (online sales taxes, cannabis taxes, and sports wagering taxes).



As many observers have noted, "normal" approaches to budgeting and forecasting may have limited value under current circumstances. That said, the County can and must prepare its annual budget and forecasts for its leadership to consider. Given this context, it is more important than ever to identify ways to strengthen and improve the County's processes. This annual report provides a review of the recommendations of the Independent Revenue Forecasting Commission (IRFC) for the FY 2021 Revenue Forecast and Long-Term Financial Plan. On July 31, 2020, the IRFC met to discuss and finalize its recommendations for improvements to the FY 2021 Revenue Forecast and Long-Term Financial Plan. Directly below is a brief list of the IRFC's recommendations, followed by sections corresponding to each recommendation, explaining our efforts to incorporate them into our forecast methods and processes. All recommendations made by the IRFC are expected to be implemented by the Office of the Chief Financial Officer.

1. Develop alternative budget scenarios, stress test major revenues, maintain internal consistency across modeling efforts, and increase transparency by communicating results with all relevant stakeholders, including the public.

2. For major, existing sources of non-property tax revenues, incorporate the most recent data from national, state, and local sources when preparing short-term forecasts, where possible. For example, for sales tax revenues, take advantage of Census Bureau monthly retail sales data at the industry level; for hotel accommodation tax revenues, make use of local information about local conventions and other tourism events.

3. For new revenue sources, continue to explore options that take advantage of what other jurisdictions have experienced (e.g., cannabis tax revenues); how local regulatory constraints might affect the County (again, cannabis tax revenues); and/or what national data and trends, appropriately scaled, suggest for County-level values (e.g., online sales tax revenues).

4. For longer-term forecasts, continue model development and potentially add forecasts based on Gross Metropolitan Product (GMP) and Gross Domestic Product (GDP) into the menu of Long-Term Financial Plan (LTFP) methodologies.

Methodological Improvement 1: Develop Alternative Scenarios

The FY 2021 revenue estimates have presented an unprecedented challenge for the County, and for revenue forecasters across the country. In coordination with the IRFC, the OCFO developed a methodology to create alternative scenarios and used them to develop revenue estimates. Accordingly, the IRFC's first recommended methodological improvement is to be consistent in the reporting of additional scenarios, and to communicate these scenarios to the public by stress testing major revenues and reporting the results.

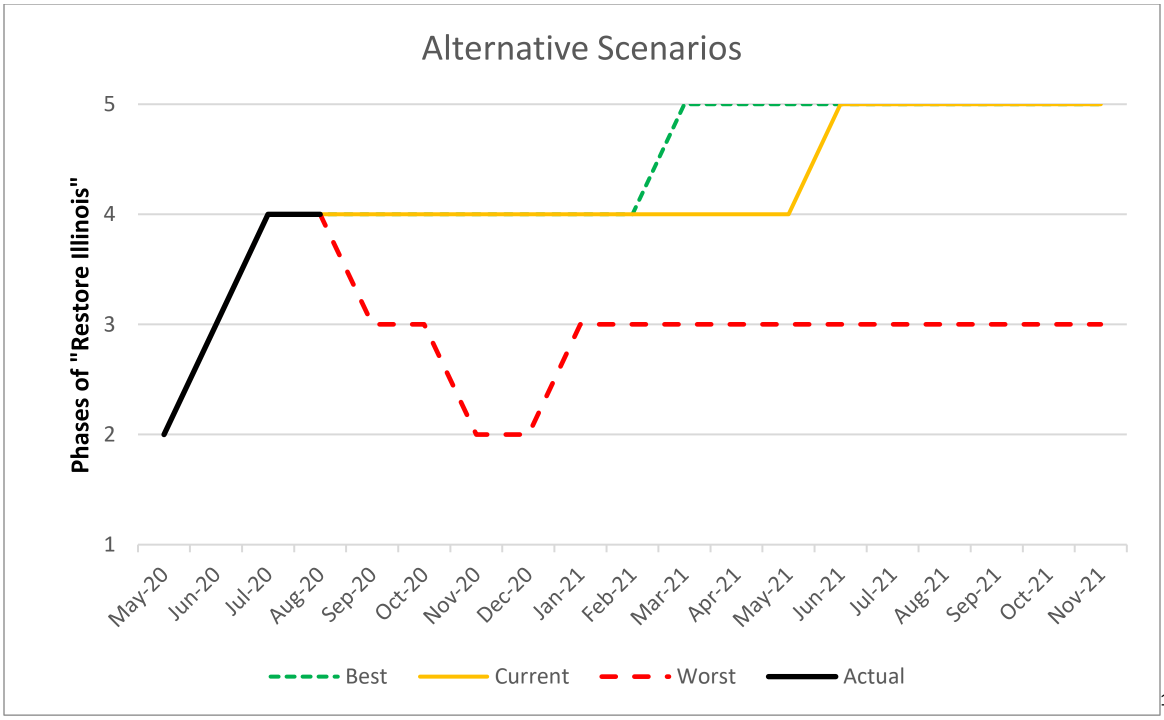
The following is a sample of the narrative and charts that the OCFO will use to communicate the additional scenarios that have been developed. Note: these scenarios will be updated in accordance with the baseline or "current" estimate used to develop the executive recommendation.

In recognition of the uncertainty presented by COVID-19, it was necessary to establish a single set of assumptions about the progression of the County through the phases of the Governor's Restore Illinois Plan. The Governor's Restore Illinois plan establishes regulations on economic and social behaviors depending on COVID-19 tracking metrics within a defined geographical area. For this analysis, Regions 10 (Suburban Cook County) and Region 11 (Chicago) are assumed to progress through each of the phases in tandem.

As of August 28, 2020, both Regions 10 and 11 are in Phase 4. Chart 1, below, shows the underlying assumptions for each scenario, and the progression of the County through the phases in these scenarios. The Current forecast assumes that the County remains in Phase 4 until May of FY 2021, when it moves to Phase 5 with the advent and widespread distribution of an effective COVID-19 vaccine. In the best-case scenario, the vaccine is available earlier, in March of 2021. In the worst-case scenario, the

County sees a near-term steep increase in Covid-19 cases and hospital admissions, resulting in a regression to Phase 3 in August of FY 2020. The County remains in Phase 3 until the winter months, when Phase 2 lockdowns are implemented in the region. In January of 2021, the County moves back to Phase 3 for the remainder of the fiscal year.

Chart 1: Alternative Scenarios of Phases for each Month



[1]

Using the Current scenario as our base, the alternative scenarios were determined by evaluating revenues that were most impacted by social distancing policies. Table 1, below, provides a list of the revenues that were adjusted for each the scenario while Chart 2 provides an analysis of these sensitive over time at the aggregate level for prior years and in the different scenarios. In total, 16 revenues were evaluated. These revenues were selected because they have been demonstrably impacted by social distancing policies.

To develop our alternative scenarios, we first found the average value of a month under each phase of our current scenario. We then applied that average value to each month according to the phases assumed in the scenarios shown in Chart 1 above. From there we adjusted the value accordingly by taking into consideration feedback from departments and adjusting for seasonality when appropriate.

[1] The County's sales tax revenue experiences a 3-month lag from when the underlying transaction occurs to when the revenue is received by the County. Therefore, it is necessary to establish each phase between now and the end of the County's FY2021 fiscal year to estimate the financial impact in FY 2021.

Table 1: Impact of Alternative Scenarios on Select Revenue Streams for FY 2021

	Best Case Scenario	Current Scenario	Worst Case Scenario
401150-County Sales Tax[2]	$791.4	$749.9	$636.2
402548-Clerk of the Circuit Court Fees	$69.3	$64.8	$27.3
401370-Parking Lot and Garage Operation	$44.6	$43.0	$10.1
401350-Amusement Tax	$31.9	$24.3	$1.9
401190-Gasoline / Diesel Tax	$88.0	$86.0	$64.6
401170-County Use Tax	$69.4	$67.1	$47.8
401550-Hotel Accommodations Tax	$22.7	$19.5	$5.8
401330-Il Gaming Des Plaines Casino	$7.4	$6.6	$-
402950-Sheriff General Fees	$16.0	$15.8	$10.1
401390-State Income Tax	$16.5	$15.2	$10.7
401130-Non Retailer Trans Use Tax	$15.9	$15.3	$10.8
401530-Gambling Machine Tax	$5.2	$3.5	$0.2
401210-Alcoholic Beverage Tax	$38.2	$36.3	$35.8
401470-General Sales Tax	$3.3	$3.1	$2.4
401230-New Motor Vehicle Tax	$2.4	$2.3	$1.7
401490-Firearms Tax	$1.1	$1.2	$1.2
Sum of Impacted Revenues	$1,223.3	$1,153.7	$866.7

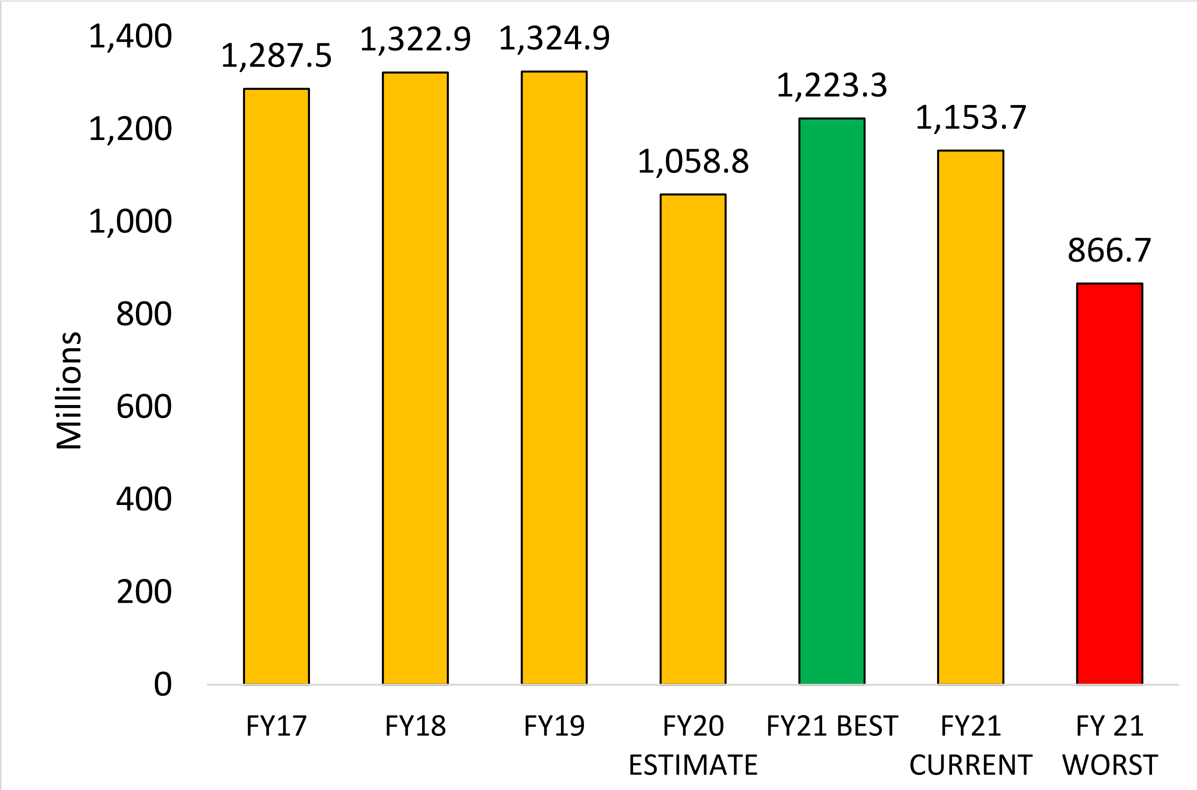
Non-Impacted Revenues	$619.2	$619.2	$619.2
TOTAL	$1,842.5	$1,772.9	$1,485.9

Social Distancing Policies have had a significant impact on the County's Sales Tax revenue. The County's revenue from Sales Tax is highly sensitive to fluctuations in the economy and makes up a significant portion of the General Fund's total revenues. Accordingly, Sales Tax revenue alone is $113.8 million lower in the worst-case scenario than in the current scenario. Further details on how the current scenario for sales tax was determined can be found in the following section

Once we include all of the revenues not determined to be significantly impacted by COVID-19, total revenues within the best-case scenario would be $1.842 billion, or $69.6 million greater than the Current scenario. In the worst-case scenario, revenues would be about $1.485 billion. Beyond Sales tax, Clerk of the Circuit Court Fees, Amusement Tax, and Parking Lot and Garage Operations Tax revenues would also be significantly impacted, with unfavorable variances relative to the current estimate of $37.5 million, $22.4.7, million, and $32.9 million, respectively.

[2] Excludes the online sales tax portion.

Chart 2: COVID-19 Impacted Revenues Overtime and for each Scenario.



Under the current scenario, the economically sensitive revenues (as defined in the first part of table 1 above) in the Current scenario are anticipated to be 1.153 billion, $94.9 million, or 9.0% greater than the 2020 estimate, but $171.2 million or 12.9% lower than the 2019 actuals. The economically sensitive revenues in the best-case scenario are anticipated to be $1.223 billion, $164.9 million, or 15.5% greater than the 2020 estimate, but still $101.7 million or 7.7% lower than the 2019 actuals. Finally, in the worst-case scenario, the revenues are expected to be $866.7 million, $192.1 million, or 18.1% lower than the 2020 estimate, which is $458.3 million or 34.6% lower than the 2019 actuals

Methodological Improvement 2: Take advantage of timely, recent data

The County continues to improve its short-term forecasts of major, existing revenue sources by taking advantage of national, state, and private sector data available at the monthly or quarterly frequency. These efforts are especially important in the current circumstances, when “usual” forecasting methods are misleading. Efforts to make use of this data should continue, with priority placed on the largest sources of non-property tax revenues.

Sales Taxes

As part of its recommendations, the IRFC requested that the OCFO strive for continuous improvement of its Sales Tax forecast. To improve upon the Sales Tax forecast methodology, the IRFC identified three areas of improvement.

1) Review the results of underlying transactions that took place during April/May and adjust assumptions for growth in sales tax revenue within each Standardized Industrialization Category accordingly.

2) Consider adjusting differences between SIC categories in each phase.

3) Examine national sales trends and their relation to County revenues by SIC Code.

The original forecast methodology, developed in coordination with the IRFC, leveraged data from multiple sources, but was largely reliant on data provided by the Illinois Department of Revenue. The Illinois Department of Revenue provides historical data for the Sales Tax collected in the County by Standardized Industrial Classification Code (SIC).[3]

This historical data was used to develop a 2019 estimate per SIC category. To develop our forecast for FY 2020 and FY 2021, we grew the 2019 estimate using a time series forecast based on the County's historical revenue data. Using data collected from the Advanced Retail Sales Forecast provided by the census[4] for April 2020, we developed estimates of the percent change from the time series forecast for each SIC category during each phase of the Governor's Restore Illinois Plan[5]. These estimates are shown in Table 2, below.

Table 2: % Change from a Time Series forecast of Sales Tax by SIC Category for each Phase (prior estimate)

SIC CATEGORIES[6]	Phase 2	Phase 3	Phase 4	Phase 5
General Merchandise	-47%	-35%	-24%	-4%
Food	13%	10%	7%	1%
Drinking and Eating Places	-49%	-37%	-24%	-4%
Apparel	-89%	-67%	-45%	-7%
Furniture & H.H. & Radio	-65%	-49%	-32%	-5%
Automotive & Filling Stations	-43%	-32%	-21%	-3%
Drugs & Misc. Retail	-10%	-8%	-5%	-1%
Total Effective Impact	**-32.6%**	**-24.4%**	**-16.3%**	**-2.4%**

[3] https://www.revenue.state.il.us/app/kob/index.jsp
[4] https://www.census.gov/retail/index.html Note that the Advanced retail sales data is provided by NAIC Code so a crosswalk was used to convert the data to SIC code prior to establishing our original estimate.
[5] https://coronavirus.illinois.gov/s/restore-illinois-introduction

[6] Excludes the following categories: Lumber bldg. Hardware, Agriculture & all Others, and Manufacturers. These SIC Categories are assumed to have no change.

In accordance with direction from the IRFC, the OFCO reviewed the most recent Advanced Monthly Retail Sales data provided by the census, data from the Illinois Department of Revenue, and credit card data by county and major metropolitan area from Opportunity Insights[7]. We used this data to develop new percent change estimates for each SIC category. These estimates are shown in Table 3, below.

Table 3: % Change from a Time Series forecast of Sales Tax Revenue by SIC Category for each Phase (Current estimate)

SIC CATEGORIES[8]	Phase 2	Phase 3	Phase 4	Phase 5
General Merchandise	-55%	-28%	-14%	-4%
Food	13%	13%	13%	1%
Drinking and Eating Places	-65%	-50%	-40%	-4%
Apparel	-55%	-28%	-14%	-7%
Furniture & H.H. & Radio	-65%	-32%	-16%	-5%
Automotive & Filling Stations	-43%	-21%	-11%	-3%
Drugs & Misc. Retail	-10%	-5%	-3%	-1%
TOTAL EFECTIVE IMPACT	**-35.3%**	**-22.0%**	**-14.7%**	**-2.4%**

Based on the observed credit card data from tracktherecovery.org, we found that Phase 2 will have a more unfavorable impact than we originally expected, but that the recovery in Phases 3 and 4 will likely be more favorable than we originally expected. This shift in Phases 3 and 4 could be partially attributed to efforts made at the federal level to stimulate the economy, as these were not envisioned in the original forecast. The current forecast could change if another stimulus package is not approved at the federal level, but we could still use these data sets to inform future forecasts.

Based on the Advance Monthly Retail Sales reports and the Quarterly US Census Quarterly E-Commerce Report[9], which showed a 31.8% increase in E-commerce in the second quarter to 2020 over the prior quarter, we built in a shift in online purchasing that reflects consumers' recent propensity to avoid in-person shopping. To reflect this shift, we have included a 25% increase in online sales within our region. Within the Long-Term Financial Plan, we assume that this shift will impact the County's retail sales at brick and mortar establishments in perpetuity. Accordingly, we estimate an additional 3% decrease in total sales in 2021.

[7] https://tracktherecovery.org/
[8] See 5 above
[9] https://www2.census.gov/retail/releases/historical/ecomm/20q2.pdf

Prior to the addition of the online sales tax (which will be discussed in further detail in the following section), our adjusted estimate showed a net change of -$15.6 million from our preliminary estimate. Phase 3 and phase 4 increases are estimated to result in a favorable impact of $10.4 million, while assumptions regarding increases in the share of online sales reduced our brick and mortar sales tax estimate by $26.0 million. These estimates are shown in Table 4, below.

Table 4: Brick and Mortar FY2021 Sales Tax Revenues Estimate, Using the SIC methodology and adjusted to reflect anticipated shift from brick and mortar locations to online sales. (Shown in millions and excludes online sales tax)

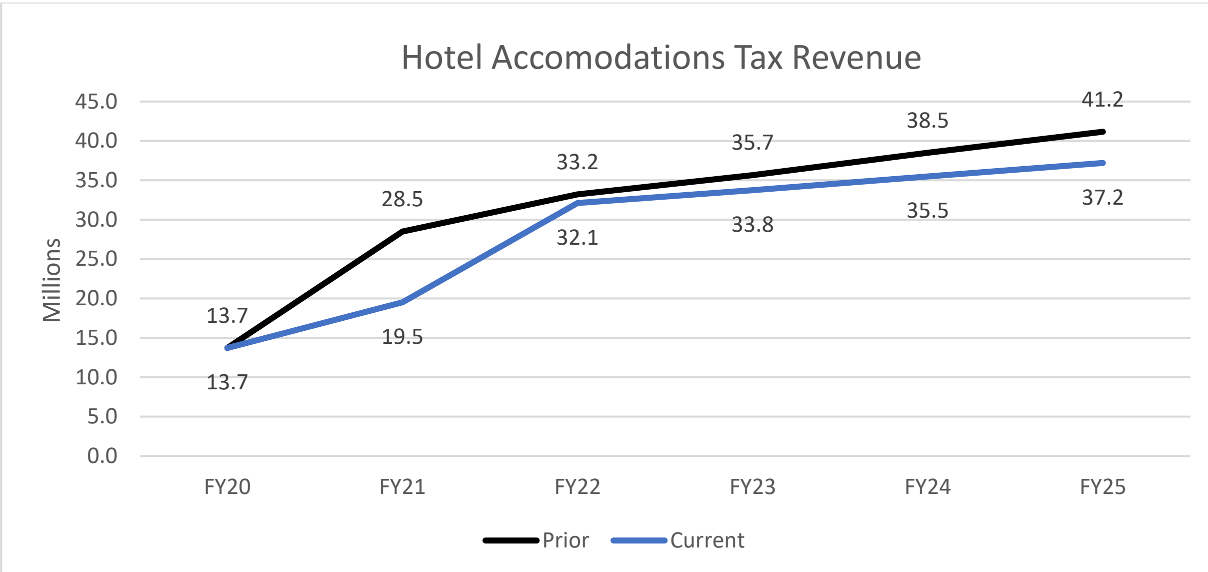
	Prior Estimate	Current Estimate	Variance
B&M Component	$765.5	$775.8	$10.4
Loss Due to Online Shift	$-	$(26.0)	$(26.0)
New Estimate for B&M	**$765.5**	**$749.9**	**$(15.6)**

Hotel Accommodation Tax

The hotel industry has been among the industries hit hardest by COVID-19. The combination of social distancing measures and reductions in leisure and business travel has worked against the hotel industry, resulting in reduced revenues from the County's Hotel Accommodation Tax. During the July 1st meeting with the IRFC, Commissioners requested that we take into consideration the impact of cancelled conventions when forecasting our Hotel Accommodation Tax revenue. We have made a concerted effort to incorporate this recommendation. We reached out to hotel industry specialists and leaders within the region and updated the long-term and short-term Hotel Accommodation Tax forecasts for the final FY 2021 budget recommendation based on their feedback. Ultimately, the County reduced its original estimate for FY 2021 by $9.0 million to take into consideration reductions in convention-based tourism, hotel occupancy rates, and expected revenue per available room.

Based on information received through the Illinois Hotel and Lodging Association, the sector recovery is expected to begin gradually in 2021 and accelerate into 2022, with slow revenue growth expected in subsequent years. HVS, a worldwide leader in assessing the industry on behalf of developers, lenders and investors, expects occupancy rates to increase significantly in 2021 from mid-2020 lows. A full recovery is not projected in 2021a as luxury properties and group sales are expected to lag, especially in the downtown Chicago market. Gradualgrowth will eventually result in occupancy rates on par with 2019 levels in 2024 or early 2025. While occupancy is expected to increase throughout 2021, revenue is likely to remain lower than would be expected in 2022 and 2023 due to ongoing discounting of room rates as the sector recovers. Rates should be on par with 2019 numbers later in 2024 or early 2025. Our long-term forecasts have been updated as indicated in Chart 3, below.

Chart 3: Variance between the Prior and Current Long-term Forecast for Hotel Accommodation Tax



Methodological Improvement 3: Improve methods for new revenues

Forecasting revenues from newly imposed taxes or otherwise newly available sources is challenging, but the County's efforts go a long way toward meeting that challenge effectively. The addition of online sales taxes, cannabis taxes, and sports wagering taxes will start to have an appreciable impact on County finances by FY 2021, and by FY 2025, the County's Long-Term Financial Plan is looking for over $300 million coming in from those new sources alone. The IRFC recommends the County continue to rely on experiences from other jurisdictions and appropriately "scaled down" national or state level analyses when preparing its own forecasts, keeping in mind that local regulatory and business conditions may affect some of these revenue sources. The County should also document its approaches carefully, updating its "Cook County Tax Policies and History" document regularly as new revenue sources are added.

Online sales taxes

Cook County will begin to collect sales tax on e-commerce purchases in 2021. Since this is a new revenue stream, typical statistical extrapolation techniques cannot be carried out. Our current methodologies rely upon analyzing national US e-commerce sales data, and then estimating the share of national e-commerce sales that will occur and be taxed in Cook County based on population ratios. The IRFC believes that multiple variations on the approach detailed below are worth exploring and commends the County for investigating how forecasts change when approaches or parameter assumptions differ.

Our model uses 2019 national e-commerce sales of $596 billion as its base value. This value is derived from the US Census Quarterly E-Commerce Report[10]. In our original methodology (Table 5, shown below), we forecasted 2021 total national e-commerce sales by growing this 2019 value by 13% per year, for a value of $761 billion in CY 2021. The 13% growth rate was based on a conservative estimate of year-over-year e-commerce sales growth, which has been 13%-16% each year from 2012-2019[11].

The Independent Revenue Forecasting Commission suggested another methodology (shown in Table 6, below) for predicting national e-commerce sales. In this methodology, growth in total retail sales is separated from the growth of the share of online retail sales. In 2019, total national retail and food service sales were $6.2 trillion[12] The previously mentioned $596 billion in e-commerce sales accounts for 9.58% of total sales. Total retail sales increase each year due to inflation and GDP growth, and the percent online has also been increasing as more people switch to online shopping. By using compound annual growth rates of total retail sales and online share, we got a 2021 retail sales estimate of $6.7 trillion, with 11.69%, or $784 billion, in e-commerce. This methodology leads to similar predictions as that shown in Table 5, but allows for further fine tuning of economic assumptions.

After forecasting nationwide e-commerce sales, we must estimate the share that occur within Cook County. A simple method is to scale by the County share of the U.S. population, which is 1.6% (328 million people in the US[13], and 5.2 million people in Cook County[14]). Another option is to scale by the County share of personal income, which is 1.8% ($17.85 trillion in the US[15], and $322 billion in Cook County[16]). We originally used population, but developed the personal income estimate based on the IRFC's suggestion that it may be more representative of the amount of money our population spends online. The original method (Table 5) uses population, and the newest methodology (Table 6) uses personal income.

The next adjustment to our estimates was accounting for the share subject to tax. Purchases of motor vehicles, food, and health stores are not charged sales tax, and needed to be excluded from our estimates. Based on data by sector from the US Census Quarterly E-Commerce Report[17], 14% of e-commerce sales fell into these three categories. This left 86% of e-commerce sales subject to tax. An additional factor impacting revenue collections is compliance in tax collection and remittance. Based on outreach to Indiana and Texas state governments, we assumed 60% compliance in 2021, which will increase in the future.

10 https://www.census.gov/retail/mrts/www/data/excel/tsadjustedsales.xls
11 https://www.census.gov/retail/mrts/www/data/excel/tsadjustedsales.xls
12 https://www.census.gov/retail/mrts/www/mrtssales92-present.xls
13 https://www.census.gov/quickfacts/fact/table/US/PST045219
14 https://www.census.gov/quickfacts/cookcountyillinois
15 https://fred.stlouisfed.org/series/A065RC1A027NBEA
16 https://fred.stlouisfed.org/series/PI17031

17 https://www2.census.gov/programs-surveys/e-stats/tables/2017/table_4.0.xls?#

After taking all of the above factors into account, total taxable online sales in Cook County still needed to be converted to revenue. The County sales tax rate is 1.75%, and the state retains an administrative fee of 1.5% of revenues collected. These rates get us to the total values in Table 5 and Table 6. Table 7 contains proposed budget values, which were obtained by converting calendar to fiscal year, converting accrual to cash basis, and developing monthly estimates based on the historical percentages of annual sales tax collections received during each month of the year.

Table 5: Prior Methodology for Estimating Online Sales Tax Revenue (in millions of dollars)

Base Assumptions	**CY 2021**
E-Commerce Growth	13.0%
Total US E Commerce sales	760,925
County share of US population	1.6%
Share Subject to Tax	85.6%
Compliance	60%
Sales tax Rate	1.75%
Revenue before admin fee	109.37
Admin fee	(1.64)
TOTAL	107.73

Table 6: Current (IRFC) Methodology for Estimating Online Sales tax Revenue (in millions of dollars)

Base Assumptions	**CY 2021**
Total Retail Sales	6,705,238
Growth of total sales	3.8%
Percent online	11.7%
Growth of online share	10.4%
Total E-Commerce Sales	783,817
Share of US personal income	1.80%
Share Subject to Tax	85.6%
Compliance	60%
Sales tax Rate	1.75%
Revenue before admin fee	126.8
Admin fee	(1.9)
TOTAL	124.9

Table 7: IRFC Proposed Methodology Converted to Fiscal Year (in millions of dollars)

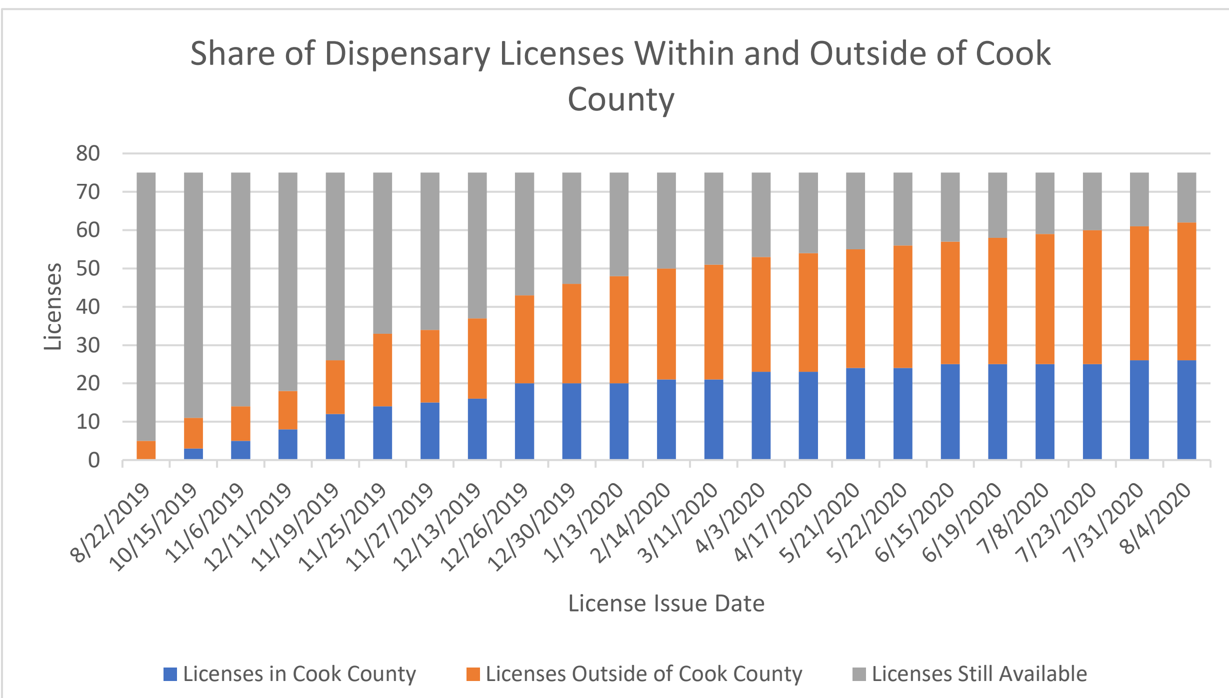
	Dec	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**TOTAL**
FY2021	-	-	-	-	8.49	8.52	10.14	9.80	10.76	11.37	10.57	10.70	**80.35**

Cannabis taxes

The IRFC has previously observed that supply-side constraints may limit the ability of within-state suppliers to meet the robust demand for adult-use cannabis. Based on the recommendation of the IRFC that we develop our understanding of cannabis supply in order to improve our forecasting for the cannabis tax, we have begun tracking the licensing of adult use cannabis cultivation centers, adult use dispensing organizations, craft growers, and infusers. As of August 12, 2020, there are 62 licensed dispensing organizations in Illinois, with 13 potential licenses still available (for a total of 75 potential licenses). Of the 62 licensed dispensing organizations in Illinois, 26 are in Cook County. 110 additional licenses may be made available after December 21, 2021. Chart 4, below, shows the number of licensed dispensing organizations in Illinois within and outside of Cook County, along with the total potential licenses available.

There are 21 licensed adult use cannabis cultivation centers in Illinois, with two of those centers being in Cook County. Additional licenses may be made available after July 1, 2021, with the total number of cultivation center licenses not to exceed 30. The Department of Agriculture is authorized to license up to 40 cannabis craft growers and infusers by the end of 2020. While the deadline to announce these licenses was originally set for July 1, 2020, this deadline was suspended due to the COVID-19 pandemic. The Department of Agriculture may license up to 60 additional cannabis craft growers and infusers by December 21, 2021. We plan to continue tracking the licensing of cultivation centers, dispensaries, craft growers, and infusers going forward.

Chart 4: Dispensary Licenses Over Time



Methodological Improvement 4: Continue model development for Long-Term Financial Plan (LTFP)

GDP Methodology

The GDP methodology assumes that many revenue streams will grow or decline at a similar rate to the US economy. Under this methodology, we start with the 2021 budget value and grow a given revenue at the same rate as forecasted GDP growth. We have four forms of this forecast: Real GDP Forecasters' Mean , Real Fed GDP Forecast, Nominal GDP Forecasters' Mean, and Nominal Fed GDP Forecast.

To develop the GDP methodology, we collected several GDP forecasts from reputable sources, including a Gross Metropolitan Product (GMP) estimate from Moody's. GDP provides an estimate of the growth in all production within the entire nation, whereas GMP provides an estimate of production within the metropolitan statistical area that includes Cook County and the surrounding region. Our collected GDP and GMP forecasts are shown in Table 9. Over time, we have observed a very close correlation between GDP/GMP and a number of our revenue streams, particularly sales tax. However, that correlation seems to break down during recessions. Despite the inconsistency during recessions, the GDP and GMP metrics provide a reasonable method for projecting revenue streams, as they provide a proxy for economic growth. By taking the mean of all projections for each year, we obtained a middle of the road estimate. This estimate was used for our GDP Forecasters' Mean. Additionally, we used the most conservative growth forecast (Federal Reserve) as our Fed GDP Forecast.

All of the forecasts shown in Table 9 are for real GDP, which is adjusted for inflation to represent actual output changes independent of price changes. Some revenues grow with price changes, and some do not. For example, gasoline is taxed by the county at a flat rate of six cents per gallon, so our revenue is not affected by the price per gallon of gasoline. However, percentage-based taxes (like the sales tax) are affected by price changes. We used real GDP estimates for flat rate taxes, and nominal GDP estimates for percentage-based taxes. Nominal GDP forecasts are shown in Table 8, below. To derive these nominal GDP forecasts from the existing real GDP forecasts, we used the inflation estimates from the Congressional Budget Office *(see Table 10)*.

For each revenue, we applied two new methodologies: Fed GDP Forecast and GDP Forecasters' Mean, using real or nominal GDP depending on the revenue. An example of this methodology for the alcoholic beverage tax can be seen in Chart 5 below. The Fed GDP Forecast is slightly lower than the GDP Forecasters' Mean. Both are within the bounds of other methodologies, showing this to be a reasonable estimate.

Table 8: Derived Nominal GDP Forecasts

	Moody's[18]	Survey of Professional Forecasters[19]	WSJ[20]	CBO[21]	Federal Reserve[22]	Mean
2020	-5.9%	-5.6%	-5.6%	-5.8%	-6.5%	**-5.9%**
2021	1.3%	3.1%	4.7%	4.0%	5.0%	**3.6%**
2022	6.3%	4.1%	3.2%	2.9%	3.5%	**4.0%**
2023	4.2%	2.2%	3.2%	2.1%	1.8%	**2.7%**
2024	1.9%	2.2%	3.2%	2.3%	1.8%	**2.3%**
2025	1.3%	2.2%	3.2%	2.3%	1.8%	**2.2%**

Table 9: Real GDP Forecasts

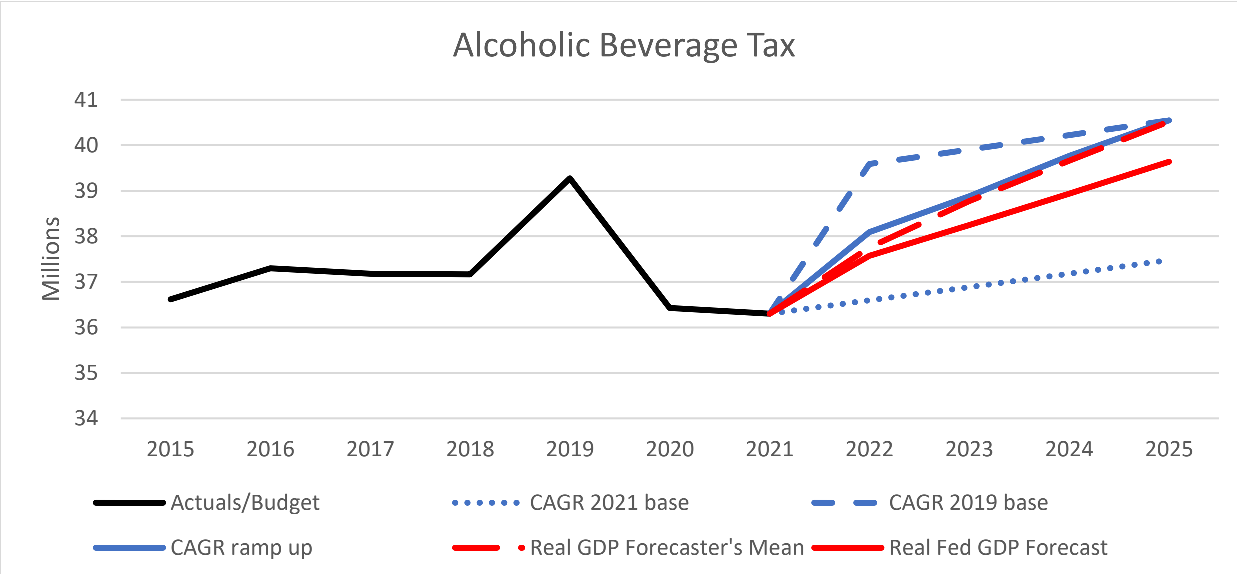
	Moody's	Survey of Professional Forecasters	WSJ	CBO	Federal Reserve	Mean
2020	-5.2%	-4.9%	-4.9%	-5.1%	-5.8%	**-5.2%**
2021	2.1%	3.9%	5.5%	4.8%	5.8%	**4.4%**
2022	8.2%	5.9%	5.0%	4.6%	5.3%	**5.8%**
2023	6.2%	4.1%	5.2%	4.0%	3.7%	**4.6%**
2024	4.0%	4.2%	5.3%	4.3%	3.8%	**4.3%**
2025	3.5%	4.3%	5.4%	4.4%	3.9%	**4.3%**

Table 10: GDP Price Index Forecast

	CBO GDP Price Index[23]
2020	0.7%
2021	0.8%
2022	1.7%
2023	1.9%
2024	2.0%
2025	2.1%

[18] Proprietary subscription, June 2020 Baseline
[19] https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/2020/survq220
[20] https://www.wsj.com/graphics/econsurvey/
[21] https://www.cbo.gov/publication/56465
[22] https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20200610.pdf
[23] https://www.cbo.gov/publication/56465

Chart 5: Real GDP Forecasts of Alcoholic Beverage Tax[24]



Reasonable and Conservative Methodology

In developing our long-term forecasts, the OCFO has implemented a policy that focuses on choosing forecasts that are both reasonable and conservative. The GDP and GMP forecasts outlined above were added to the list of forecasts to be reviewed as part of this overarching policy. As demonstrated by COVID-19, many of the County's revenues are inherently volatile and subject to unpredictable downturns in the economy. By selecting methods that yield the most reasonable and conservative results, we adhere to our commitment to prudence and fiscal responsibility.

To develop the long-term revenue forecast (2022-2025), we implemented the numerous methodologies described above. Our process for selecting the forecast to use for each revenue stream involved first eliminating any forecasts that seemed unreasonable (significantly too high or too low), and then selecting the most conservative of the remaining options. What constitutes "reasonable" is a matter of discretion, and ultimately has more to do with our knowledge of trends in each revenue than a precise formula. We consulted with relevant departments when necessary to get their opinions, to develop the most conservative reasonable forecast.

[24] CAGR refers to the compound annual growth rate, which was determined over the three year period 2017-2019. Further details are available in the methodology sections of the IRFC website.

As an example, Chart 6 below shows all methods considered for the Use Tax. The methods shown here are those that took into consideration COVID-19. Basic statistical extrapolation methods are excluded here, but would be included in a normal year. In this chart, the CAGR[25] 2019 base and CAGR 2019 base ramp up methodologies provide estimates that seem too high compared to other forecasts, and that assume a quick recovery from the current recession. The "Regression-Moody's" methodology provides the most conservative estimate, but this estimate may be unreasonably low, as it predicts lower revenue in 2022 than in 2021. Since the CAGR 2019 base and CAGR 2019 base ramp up methodologies seemed too high and the Regression-Moody's methodology seemed too low, we eliminated these as unreasonable estimates. This left three relatively similar options, of which we selected the most conservative forecast: CAGR.

This "reasonable and conservative" selection method was repeated for all revenues, with the goal of selecting one reasonable and conservative methodology for each. A full list of chosen methodologies is available in Table 11, as well as in the published forecast summary on the IRFC website.

Chart 6: Possible Forecasts for Use Tax

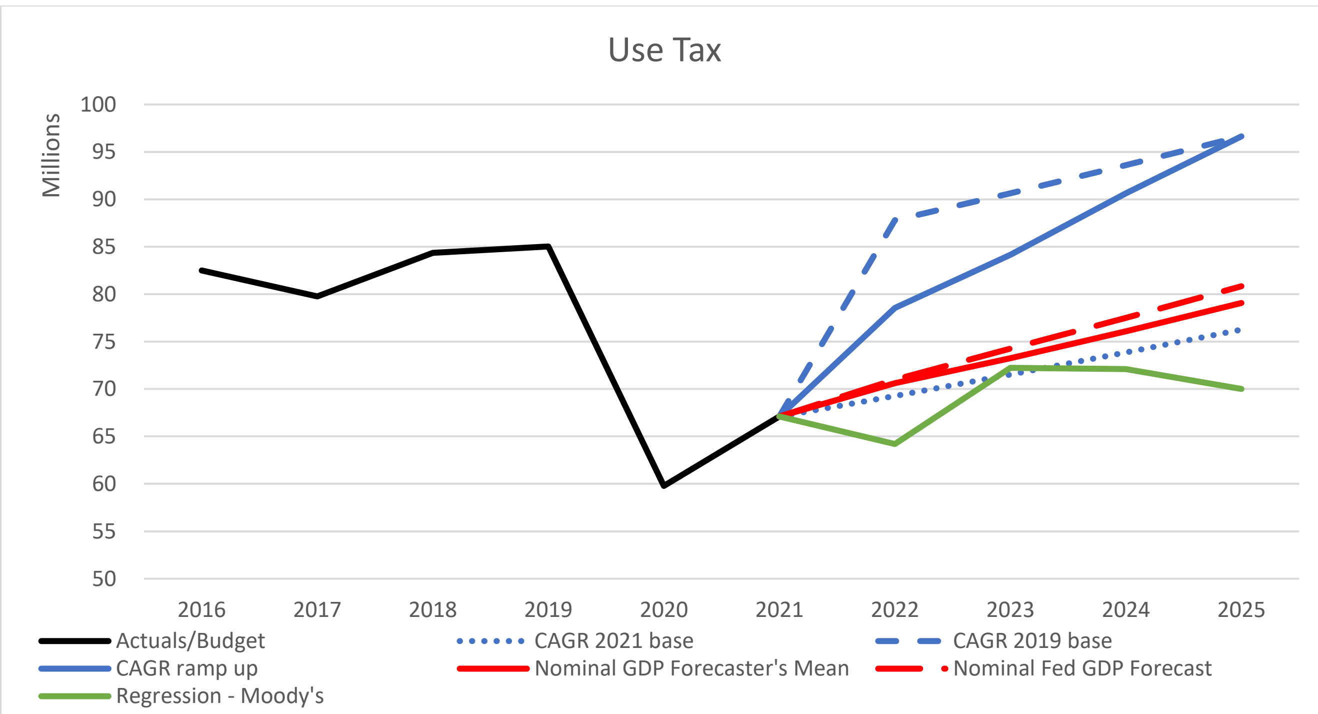


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Table 11: Long Term Methodologies of Taxes and Fees

401130-Non Retailer Trans Use Tax	Real Fed GDP Forecast
401150-County Sales Tax	CAGR
401170-County Use Tax	CAGR
401190-Gasoline / Diesel Tax	CAGR 2019 base ramp up
401210-Alcoholic Beverage Tax	CAGR * adjusted 2019
401230-New Motor Vehicle Tax	Nominal Fed GDP Forecast
401250-Wheel Tax	Flat
401310-Off Track Betting Comm.	CAGR
401330-Il Gaming Des Plaines Casino	CAGR 2019 base
401350-Amusement Tax	Regression – Moody's
401370-Parking Lot and Garage Operation	Nominal Fed GDP Forecast
401390-State Income Tax	CAGR
401430-Cigarette Tax	Average Natural Decline last few years
401450-Other Tobacco Products	CAGR 2019 base
401470-General Sales Tax	CAGR 2019 base ramp up
401490-Firearms Tax	Nominal Fed GDP Forecast
401530-Gambling Machine Tax	CAGR 2019 base ramp up
401550-Hotel Accommodations Tax	CAGR 2019 base ramp up
401565-Sweetened Beverage Tax	None
401570-Video Gaming	Simple Exp. Smoothing
401580-Cannabis Tax	New Revenue
401590-Sports Wagering	New Revenue
402548-Clerk of the Circuit Court Fees	CAGR 2019 base ramp up
402010-Fees and Licenses	FLAT
402100-County Treasurer	CAGR
402150-County Clerk	CAGR
402200-County Recorder and Registrar	CAGR
402250-Recorder Audit Revenues	CAGR
402300-Building and Zoning	Real Fed GDP Forecast
402350-Environmental Control	FLAT
402400-Highway Dept Permit Fees	CAGR
402450-Liquor Licenses	CAGR 2019 base
402500-County Assessor	CAGR 2019 base
402950-Sheriff General Fees	CAGR
403060-State's Attorney	Simple Trend Forecast
403100-Supportive Services	FLAT
403120-Public Administrator	Simple Trend Forecast
403150-Public Guardian	12-Month Moving Average Forecast
403170-Court Service Fee	FLAT
403210-Medical Examiner	Simple Trend Forecast
403240-Chief Judge Circuit Court	FLAT
403280-Contract Compliance M/WBE Cert	CAGR 2019 base ramp up
403300-Assessor Tax Fraud	

Conclusion

Beyond the recommended methodological improvements identified above, the OCFO has worked closely with the IRFC to establish some significant changes in our revenue forecasting processes and procedures, in order to improve accuracy and transparency. For instance, the County has established a website specifically dedicated to the work performed in coordination with the IRFC. On this website, the public can find links and copies of the most current and up-to-date forecasts, as well as meeting minutes, presentations, and agendas from each of the IRFC's public meetings. We have also posted the data used in the forecasting process, along with a library of methodologies that we use in the forecasting process. We have committed to several principles that we intend to advance in perpetuity. These efforts underscore our joint commitment to transparency and accuracy in revenue forecasting.

COVID-19 continues to have a profound impact on the County's revenues and will have long-standing implications both for the value of the revenues we receive and for how we use today's data to forecast future revenue streams. Like many forecasting bodies, we have had to put aside the statistical extrapolation tools we hoped to rely upon to establish reasonable estimates of our current and out-year estimates. The assumption that "what has happened in the past will likely happen in the future" has become untenable for many of our revenues. Accordingly, the OCFO has asked for and received assistance from the IRFC with forecasting the revenue streams that we believe will be most impacted by COVID-19, as well as the new revenue streams we expect to receive starting in FY 2021. We have worked together to develop communication strategies that will help us explain the uncertainty that COVID-19 represents to our revenue streams, and we have advanced principles and processes that will allow us to be more intentional, efficient and accurate in our revenue forecasting processes moving forward. With the assistance of the IRFC, and based on the most current and available data, we are confident that the short-term and long-term forecasts for FY 2021 to FY2025 are reasonable.