Key Differences in the IHS Markit Forecast

- Real GDP Growth Lower in Near Term than October Presentation
  - FY2020 Growth Rate Lowered to 2.0% vs 2.1%
  - Private Domestic Final Sales Growth Lowered
  - Nonresidential Fixed Investment Lowered
- Federal Reserve Expected to Hold Rates Constant
- Housing Starts Forecast Increased
- Export Growth Reduced
- Oil Prices Lowered
Control Scenario
(Probability – 55%)

- Growth slows to 2.1% in FY2020
  - Reduced pace of inventory accumulation
  - Vehicle sales edge lower over next two fiscal year
  - Business fixed investment and output estimates reduced
- Housing starts and residential fixed investment upgraded
- Federal Reserve expected to hold Federal Funds rates at current levels
- Decreases in Brent oil prices, as oil expected to be $64/bbl in calendar 2019 and fall back to $57/bbl by 2020

Optimistic Scenario
(Probability – 10%)

- Increases in Real GDP to 2.3% in CY19
  - Housing market fuels growth due to increased household formation among young adults
  - Lower nonaccelerating inflation rate of unemployment at 4.0%
  - Productivity growth averages 2.6% over CY19-22, 1.0% higher than the control forecast
- On the demand side, higher incomes and low inflation support robust consumer spending of 2.8% in CY19 and 3.3% in CY20
Pessimistic Scenario

(Probability – 35%)

- Three quarter recession beginning in Q2 of FY21
  - Broad loss in confidence and growing risk aversion
  - Declines in wide range of investment and consumer spending categories
  - Current expansion ends after 138 consecutive months of growth
- Real consumer spending in CY19 increases by 2.8%, then slows to 1.7% in CY20
- Unemployment rate starts rising, reaching 5.8% by 2021
- Stock market drops 4.9% during CY20

Real GDP

(Billions of Chained 2012 Dollars, Annual Rate, BEA)
Real GDP – Control Forecast
(IHS Markit, Annual Growth Rates)

Real GDP – Optimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)
Real GDP – Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

<table>
<thead>
<tr>
<th>Year</th>
<th>October</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2019</td>
<td>2.6%</td>
<td>2.6%</td>
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<tr>
<td>FY2020</td>
<td>1.8%</td>
<td>2.0%</td>
</tr>
<tr>
<td>FY2021</td>
<td>-1.1%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>FY2022</td>
<td>2.0%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

U.S. Employment – Total Non-Farm Payrolls
(Millions, BLS)

<table>
<thead>
<tr>
<th>Year</th>
<th>Optimistic</th>
<th>Pessimistic</th>
<th>Control</th>
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</thead>
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<tr>
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<td>FY22</td>
<td>200.0</td>
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U.S. Employment – Manufacturing
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

<table>
<thead>
<tr>
<th></th>
<th>FY2019</th>
<th>FY2020</th>
<th>FY2021</th>
<th>FY2022</th>
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</thead>
<tbody>
<tr>
<td>October</td>
<td>1.9%</td>
<td>0.2%</td>
<td>-1.0%</td>
<td>-4.1%</td>
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<tr>
<td>December</td>
<td>1.9%</td>
<td>0.3%</td>
<td>-2.3%</td>
<td>-4.8%</td>
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Housing Starts
(Millions, Annual Rate, U.S. Bureau of the Census)

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<tr>
<td>Pessimistic</td>
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</table>
Housing Starts - Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

Housing Starts - Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)
Real Personal Income
(Billions of Chained 2012 Dollars, Annual Rate, BEA)

Real Personal Income - Control Forecast
(IHS Markit Forecast, Annual Growth Rates)
Real Personal Income - Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

Real Consumer Spending (Excluding Food and Energy)
(Billions of 2012 Dollars, Annual Rate, BEA)
Real Consumer Spending (Excluding Food and Energy)

Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

<table>
<thead>
<tr>
<th></th>
<th>October</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2019</td>
<td>2.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>FY2020</td>
<td>3.0%</td>
<td>2.9%</td>
</tr>
<tr>
<td>FY2021</td>
<td>2.8%</td>
<td>2.7%</td>
</tr>
<tr>
<td>FY2022</td>
<td>2.6%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Real Consumer Spending (Excluding Food and Energy)
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

<table>
<thead>
<tr>
<th></th>
<th>October</th>
<th>December</th>
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<tbody>
<tr>
<td>FY2019</td>
<td>2.9%</td>
<td>2.9%</td>
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<tr>
<td>FY2020</td>
<td>2.85%</td>
<td>2.80%</td>
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<tr>
<td>FY2021</td>
<td>1.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>FY2022</td>
<td>1.6%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
Real Consumer Spending on Durable Goods
(Billions of 2012 Dollars, Annual Rate, BEA)

Optimistic  Pessimistic  Control

Real Consumer Spending on Durable Goods
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

October  December

FY2019  FY2020  FY2021  FY2022
Real Consumer Spending on Durable Goods
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

<table>
<thead>
<tr>
<th></th>
<th>October</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2019</td>
<td>4.4%</td>
<td>4.4%</td>
</tr>
<tr>
<td>FY2020</td>
<td>5.7%</td>
<td></td>
</tr>
<tr>
<td>FY2021</td>
<td>0.2%</td>
<td>-0.6%</td>
</tr>
<tr>
<td>FY2022</td>
<td>3.0%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Nominal Consumption of Gasoline and Oil
(Billions of Dollars, Annual Rate, BEA)
Nominal Consumption of Gasoline and Oil
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

- FY2019: 4.1% - 0.5%
- FY2020: 1.1%
- FY2021: 2.3%
- FY2022: 2.7%

Nominal Consumption of Gasoline and Oil
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

- FY2019: 4.1% - 1.9%
- FY2020: -0.5%
- FY2021: -2.4%
- FY2022: -7.5%

October
December
Unit Sales of New Light Vehicles
(Millions, Annual Rate, BEA)

- Optimistic
- Pessimistic
- Control

Unit Sales of New Light Vehicles
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)
Unit Sales of New Light Vehicles
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

Real Gross Private Fixed Investment
(Billions of Chained 2012 Dollars, Annual Rate, BEA)
Real Gross Private Fixed Investment
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

- October
- December

FY2019: 3.17%
FY2020: 1.2%
FY2021: 1.8%
FY2022: 1.7%

Real Gross Private Fixed Investment
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

- October
- December

FY2019: 3.2%
FY2020: 0.2%
FY2021: -6.0%
FY2022: -1.3%
Real Exports of Goods and Services
(Billions of Chained 2012 Dollars, Annual Rate, BEA)

Real Exports of Goods and Services
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)
Real Exports of Goods and Services
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)

- 0.56%
- 1.7%
- 3.0%
- 5.7%

0.57%
0.6%
2.1%
3.3%

October
December

Real Exports of Motor Vehicles and Parts
(Billions of Chained 2012 Dollars, Annual Rate, BEA)

Optimistic
Pessimistic
Control
Real Exports of Motor Vehicles and Parts
Control Forecast
(IHS Markit Forecast, Annual Growth Rates)

Real Exports of Motor Vehicles and Parts
Pessimistic Forecast
(IHS Markit Forecast, Annual Growth Rates)
Kentucky Non-Farm Employment
(Thousands, KY MAK Model)
Non-Farm Employment – US and Kentucky
(Fiscal Year Growth Rates, IHS Markit and KY MAK Model)

US - Control  KY - Control

1.7% 1.30% 1.9% 1.7% 1.5% 1.7% 1.4% 1.1% 0.6% 0.3%
2.10% 1.6% 1.4% 0.9% 0.5% 0.8% 1.0% 0.7% 0.6%

Kentucky Non-Farm Employment Control Forecast
(KY MAK Model, Annual Growth Rates)

October  December
FY2019 FY2020 FY2021 FY2022
0.8% 0.8% 0.8% 0.66% 0.4%
0.8% 1.1% 0.7% 0.3%
Kentucky Non-Farm Employment
Pessimistic Forecast
(KY MAK Model, Annual Growth Rates)

<table>
<thead>
<tr>
<th>Year</th>
<th>October</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY2019</td>
<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>FY2020</td>
<td>0.7%</td>
<td>1.1%</td>
</tr>
<tr>
<td>FY2021</td>
<td>-0.6%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>FY2022</td>
<td>-0.6%</td>
<td>-1.1%</td>
</tr>
</tbody>
</table>

Kentucky Manufacturing Employment
(Thousands, KY MAK Model)

Optimistic  Pessimistic  Control
Kentucky Manufacturing Employment
Pessimistic Forecast
(KY MAK Model, Annual Growth Rates)

<table>
<thead>
<tr>
<th>FY2019</th>
<th>FY2020</th>
<th>FY2021</th>
<th>FY2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1%</td>
<td>0.3%</td>
<td>-2.7%</td>
<td>-3.0%</td>
</tr>
<tr>
<td>0.3%</td>
<td>-0.3%</td>
<td>-2.0%</td>
<td>-3.7%</td>
</tr>
</tbody>
</table>

Kentucky Personal Income
(Millions of Dollars, KY MAK Model)

Optimistic - Pessimistic - Control
Personal Income – US and Kentucky
(Fiscal Year Growth Rates, IHS Markit and KY MAK Model)

US - Control
KY - Control

Kentucky Personal Income Control Forecast
(KY MAK Model, Annual Growth Rates)
Kentucky Personal Income
Pessimistic Forecast
(KY MAK Model, Annual Growth Rates)

Kentucky Wages and Salaries
(Millions of Dollars, KY MAK Model)
Wages and Salaries – US and Kentucky
(Fiscal Year Growth Rates, IHS Markit and KY MAK Model)

[Graph showing growth rates for US and Kentucky from FY2014 to FY2022]

Kentucky Wages and Salaries
Control Forecast
(KY MAK Model, Annual Growth Rates)

[Graph showing growth rates for October and December from FY2019 to FY2022]
Kentucky Wages and Salaries
Pessimistic Forecast
(KY MAK Model, Annual Growth Rates)

<table>
<thead>
<tr>
<th></th>
<th>October</th>
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</tr>
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<tbody>
<tr>
<td>FY2019</td>
<td>3.4%</td>
<td>3.5%</td>
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<td>FY2020</td>
<td>4.5%</td>
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<td>1.93%</td>
<td>1.89%</td>
</tr>
<tr>
<td>FY2022</td>
<td>1.6%</td>
<td>1.0%</td>
</tr>
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</table>

FY2019, FY2020, FY2021, FY2022
October, December