Round 8 Econometric Benchmark Forecasts

Background and Approach

Over the last several years the conversion process from SIC codes to NAICS for national and metropolitan job data series was completed. This conversion meant that the regional econometric model process for Cooperative Forecasting needed to incorporate and use NAICS job data. The two options for doing this were to develop a new set of equations for Washington region or to purchase forecasts from one of the national firms providing such services.

It was concluded that development of a new econometric model for Washington would be difficult given that the readily available NAICS historical data needed for calibration would be limited to 1990-2008, which is the period for which the SIC code job data has been converted to NAICS.

However several national research firms have developed new econometric models based on NAICS, and these were reviewed for applicability for development of regional control totals for use in Round 8 of the Cooperative Forecasting process. Reviews were made of the methodological approach, forecast items and geographic coverage. Series reviewed included Global Insight, National Planning Data Services, and Woods and Poole.

In April, staff briefed the Planning Directors Technical Advisory Committee (PDTAC) on the issues associated with developing new regional benchmark totals for Round 8 as well as on possible approaches for moving forward. During this briefing, staff explained that the option to purchase the Global Insight forecasts was selected for the following reasons:

- The econometric approach is not the traditional model which is constructed as proportions of the United States. In the Global Insight system each region is modeled individually and then linked into a national system. This approach enables a focus on internal growth dynamics and differential business cycle response.
- The Global Insight metropolitan area forecasting is based on behavioral econometric models.
- The Global Insight forecasts provide detailed specification and generates forecasts of demographic and macroeconomic concepts including employment by NAICS classifications, population cohorts, households, and labor force measures.
- The Global Insight forecasts extend forty years from 2008 to 2038..

- The forecasts could be obtained for different regional geographic definitions.

It was concluded that the Global Insight econometric forecasts constituted the best match for project requirements, providing a very reasonable and defensible approach and the data items needed for the Cooperative Forecasting process.

The forecasts were obtained for the 1983 MSA (= COG region plus the counties of Calvert, Charles and Stafford), the 2003 Washington Metropolitan Statistical Area (as currently defined by the US Office of Management and Budget) and the TPB Model Region (the current MSA less Warren County and plus King George, Anne Arundel, Carroll, Howard and St Mary's counties). The forecasts were provided by year for 2009-2038 for twelve major NAICS categories, population by age, and households. The forecast series obtained was based on actual data through October of 2008.

Adjustments to Global Insight Econometric Forecasts

The econometric model forecasts were analyzed reviewed with the Cooperative Forecasting and Data Subcommittee at their meetings in April, May and June. It was determined that certain adjustment factors need to be considered. Given below is the list of factors that were considered and adjustments made.

- **Extension of the Forecast Series for Two Years to 2040**

The Global Insight metropolitan area forecast series are for 40 years, and in this case the base year is 2008 and the series goes through 2038. The series was extended to 2039 and 2040 for all forecast items using simple extrapolation of the rate of growth for each item.

- **Evaluation of the Short-term Forecasts to 2015 for Reasonableness Given the Current (2007-2009) Recession**

The Global Insight forecasts were generated in the fall of 2008 when the U.S. and most metropolitan areas were in recession. Their methodology applies analysis of short-term trends and business cycle implications to the forecasts through 2014. Their narrative outlook for the 2009-2014 period reflects reasonable assessments of the likely economic changes for the period, and is fairly consistent with analyses and outlook for the region prepared by the GMU Center for Regional Analysis:

"*The negative growth implications of the current economic recession will be short-lived for the (Washington) MSA economy, which will continue to maintain its strength, with sustained efficiency gains in high-tech sectors and private service-producing sectors…Employment growth in the metro area will experience some*

deceleration over the next five years, posting an average annual growth rate of 1.3%, compared with 1.8% growth during 2003-2007. Professional and business services growth will lead employment growth, expanding 3.3% annually…"

This characterization parallels job data trends since last fall when Global Insight made these observations. Historical job trends and the Global Insight short-term forecasts are shown in the chart below.

Source: BLS March 2009 Benchmark, GMU Center for Regional Analysis, Global Insight
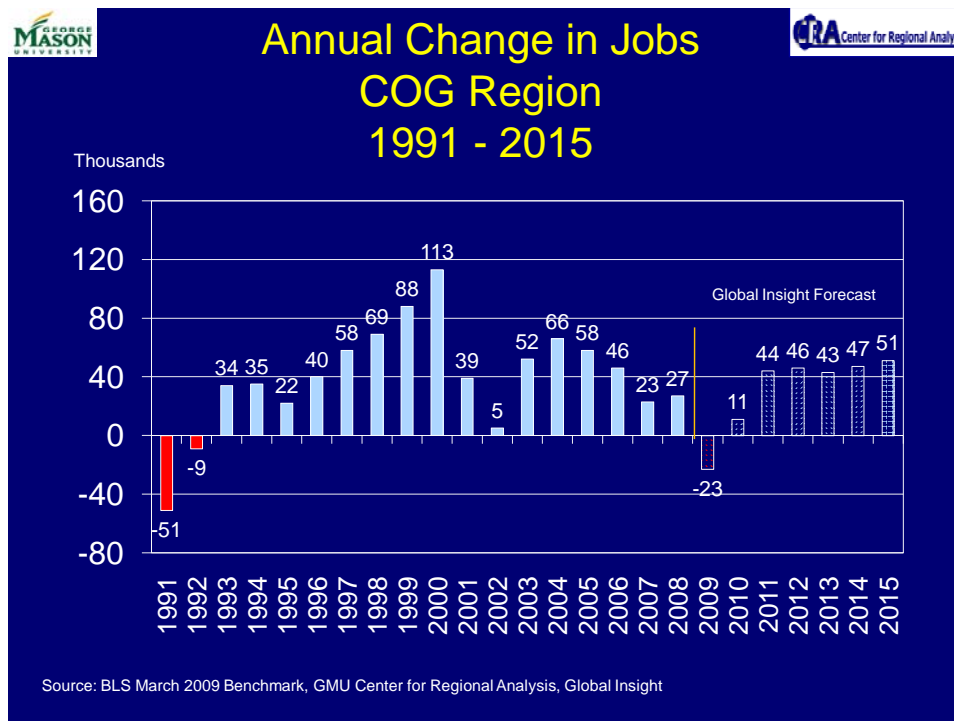
The trends in jobs through April of 2009 actual data would indicate an annualized job loss in 2009 of -15,000 (average monthly loss Jan-Apr), not very different from the projection of -23,000 in the chart.

The region's job losses so far in the current recession are heavily concentrated in construction and retail trade sectors while the region continues to grow in professional and business services jobs, education and health services jobs, and in federal government jobs. This growth is expected to continue and accelerate as the overall economy recovers, and as the housing market and consumer spending regain footing the region's overall job picture will turn positive, and the 2010-2015 forecasts by Global Insight look very reasonable.

Given this, it was concluded that no adjustments were necessary to reflect the short-term forecasts results as the effects are incorporated into the forecasts.

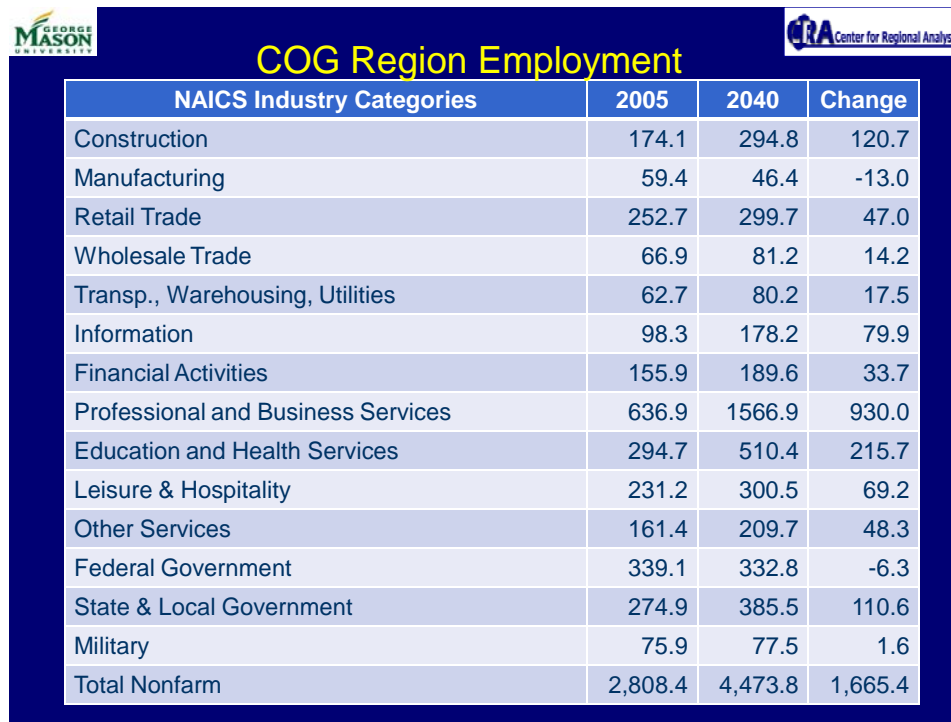- **Addition to Total Employment to Include Self-employed**

Global Insight's forecasts use employment definitions of BLS and therefore do not include self-employed. The forecasts therefore needed to be adjusted to add self-employed as a category of employment to provide the forecasts of total employment. The adjustment used for this factor in previous Cooperative Forecasting econometric modeling was in the range of 7-10 percent. The most recent information is available from the 2000 Census as shown below.

Self-Employed from 2000 Census

A. Private for-profit Wage & Salary	1,566,193
1. Employee	1,491,427
2. Self-employed in own Incorporated business	74,766
B. Private not-for-profit Wage & Salary	236,548
C. Government	604,721
Total Wage & Salary = A1 +B + C	2,332,696
D. Self-employed in not own incorporated business	136,947
Total Self-employed = A2 + D	211,713
Unpaid Family Workers	4,557
Total Employment = Wage & Salary + Self-Employed	2,548,966

Factor to get Total Jobs from Wage & Salary = 2,548,966/2,332,696 = 1.093

As developed from this table, the factor of 1.093 was applied to total employment for each forecast year to provide total employment and the forecast of self-employed for each year.

- **Reasonableness of the Overall Forecasts of Jobs by NAICS Category** (in terms do the forecasts reasonably reflect the unique Washington economy).

The initial forecasts to 2040 by NAICS category are shown in the table below. The forecasts reflect very well the trends in the Washington economy relative to its current structure and its strengths.

COG Region Employment

NAICS Industry Categories	2005	2040	Change
Construction	174.1	294.8	120.7
Manufacturing	59.4	46.4	-13.0
Retail Trade	252.7	299.7	47.0
Wholesale Trade	66.9	81.2	14.2
Transp., Warehousing, Utilities	62.7	80.2	17.5
Information	98.3	178.2	79.9
Financial Activities	155.9	189.6	33.7
Professional and Business Services	636.9	1566.9	930.0
Education and Health Services	294.7	510.4	215.7
Leisure & Hospitality	231.2	300.5	69.2
Other Services	161.4	209.7	48.3
Federal Government	339.1	332.8	-6.3
State & Local Government	274.9	385.5	110.6
Military	75.9	77.5	1.6
Total Nonfarm	2,808.4	4,473.8	1,665.4

The strongest growth categories are Professional and business services, education and health services, construction and state and local government. More than half the growth is in the Professional and business services sector, which has been the strongest growth sector of historical NAICS data back to 1990. The Federal government sector is showing growth in the current period, and consideration was given making an adjustment the forecasts to reflect this. However, this may well be a short-term matter, and is likely a replacement for some Professional and business services jobs, rather than added growth.

The forecasts of employment for the Washington region by category seem very reasonable, and reflect Washington's unique structure and its long-term prospect which is to grow faster than the national economy since its structural strength is where the national economy is headed.

- **The Relationship between the Forecasts of Jobs and Households** (and their relationship relative to in-commuting imputation and adequacy of the supply of workers for the Jobs Being Forecasted.

An examination was made of relationships of growth rates and jobs/household and persons/household for reasonableness and implications for in-commuting using alternative scenarios. The jobs/household ratios in the GI forecasts for the COG Region increased gradually from 1.52 in 2005 up to 1.72 in 2040.   After adjusting the employment forecasts to include self-employed jobs, the population and household GI forecasts were adjusted to maintain the jobs/household ratios. Adjustments in these were necessary for the short-term to be consistent with 2007-2008 real data.

It was concluded after making these adjustments that, in the outer years of the series, that there would not be enough households to provide enough workers for the employment. The implication was that in-commuting would have to be extremely high in the 2030-2040 period to provide a balance of workers and jobs.

This conclusion led to the development of two scenarios:

Scenario 1 was based on the premise that the lack of sufficient growth in households (and therefore workers) would constrain job growth, beginning slightly in 2025 and gradually more significantly to 2040. The overall jobs to households ratio for 2005 was 1.66, and an upper limit ratio of 1.70 was used to adjust the employment forecasts downward in the outer years. ("Household-Constrained Scenario)

Scenario 2 was based on the premise that employment is the driver and that more households will come to the region for the jobs and that local policy would change over the years to enable both the jobs and the households in the future years. (Employment-Driven Scenario"

The forecasts as adjusted for these two scenarios are shown on the following two pages in tabular and chart form.

SCENARIO 1 – HOUSEHOLD-CONSTRAINED

	R8 Jobs		R8 HH		R8 Pop	
		5-yr		5-yr		5-yr
2005	3,069.6		1,846.0		4,927.2	
2010	3,161.1	91.5	1,917.9	71.9	5,183.8	256.6
2015	3,413.0	251.9	2,024.8	106.9	5,400.1	216.3
2020	3,656.2	243.2	2,150.7	125.9	5,691.3	291.2
2025	3,846.1	189.9	2,262.4	111.7	5,985.6	294.3
2030	4,045.2	199.1	2,379.5	117.1	6,280.2	294.6
2035	4,235.9	190.7	2,491.7	112.2	6,564.7	284.5
2040	4,427.3	191.4	2,604.3	112.6	6,847.4	282.7

Scenario 1
Employment Change in Five-Year Increments
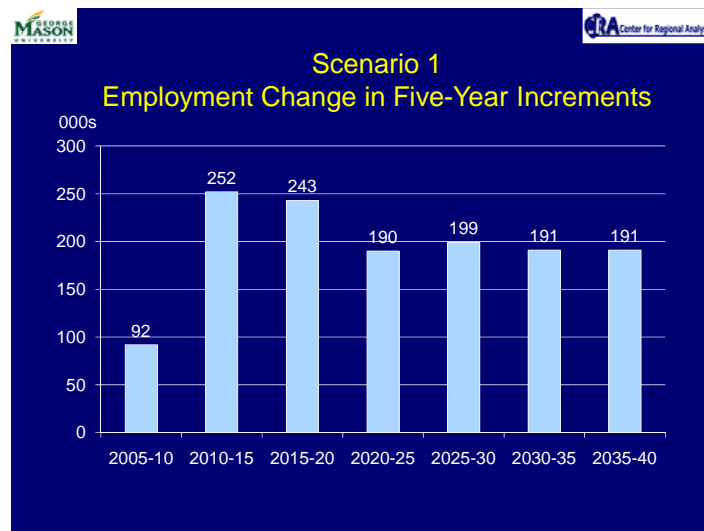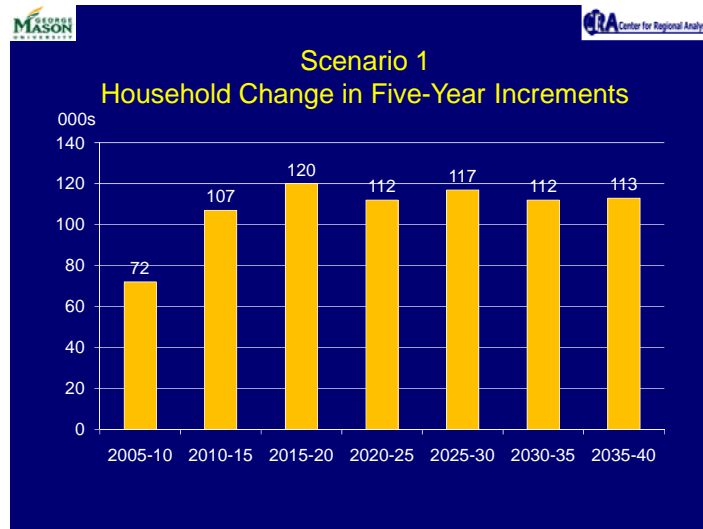
SCENARIO 2 – EMPLOYMENT-DRIVEN

	R8 Jobs		R8 HH		R8 Pop	
		5-yr		5-yr		5-yr
2000					4581.3	
2005	3,069.6		1,846.0		4,927.2	345.9
2010	3,161.1	91.5	1,917.9	71.9	5,183.8	256.6
2015	3,413.0	251.9	2,024.8	106.9	5,400.1	216.3
2020	3,683.8	270.8	2,150.7	125.9	5,691.3	291.2
2025	3,937.0	253.2	2,315.9	165.2	6,127.1	435.8
2030	4,237.9	300.9	2,492.9	177.0	6,579.4	452.3
2035	4,570.7	332.8	2,688.7	195.8	7,083.6	504.2
2040	4,889.8	319.0	2,876.3	187.7	7,562.6	479.0
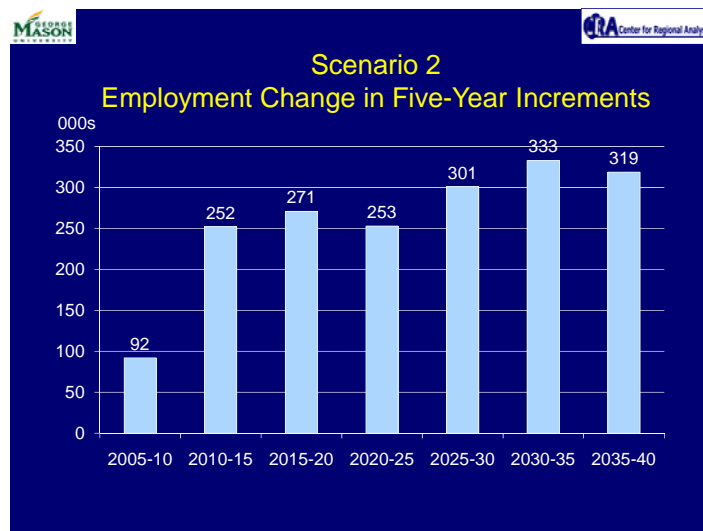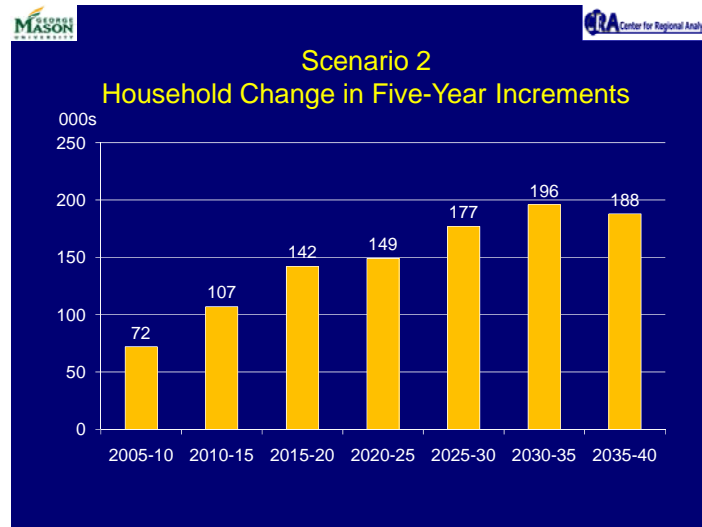
Conclusions/Recommendation

The above issues and scenarios, along with other related information, were presented to the Cooperative and Forecasting and Data Subcommittee at its June 2, 2009 meeting. The discussion led to a general consensus that Scenario 1 should be used as the regional econometric benchmark for Round 8 of Cooperative Forecasting. Some of the discussion points included:

- Scenario 1 indicates significant and healthy job growth even with downward adjustments of the outer year forecasts.
- The Scenario 2 job forecasts are very strong in the outer years – will they be attainable in the next 25 years when more jobs may be done remotely with technology advances?
- The household forecasts in Scenario 2 will likely mean significant local policy changes for more residential land and higher densities. That could happen but may be difficult.
- Changes in job and household relationships for providing workers for jobs could be somewhat better understood in the next few years as the housing market downturn, gasoline prices and the recession play out and affect demographic relationships. Changes that can be picked up from the 2010 Census resulting from these forces can be incorporated into the next Round of Cooperative Forecasting in 2012-13.

Planning Directors Technical Advisory Committee Action

At its meeting on June 19, the Planning Directors Technical Advisory Committee considered the econometric forecasts and adjustments, the two scenarios, and the

discussion of the Cooperative Forecasting and Data Subcommittee. Following the consideration and discussion, the PDTAC approved the Scenario 1 (Household-Constrained) econometric forecasts for use in the Round 8 Cooperative Forecasting process.