



# *Discussion of Long Term Trends in Energy Efficiency & the Economy*

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## Energy & Economic Data - 1990 to 2030

Year	GWh	Real GDP Millions	Employment	Population
1990	140,919	\$603,730	8,395,100	18,020,780
2000	156,636	\$777,160	8,787,700	18,998,430
2010	161,334	\$944,810	8,684,150	19,553,820
2020	187,015	\$1,222,530	9,609,460	19,757,520
2030	208,945	\$1,530,260	9,869,940	19,844,390

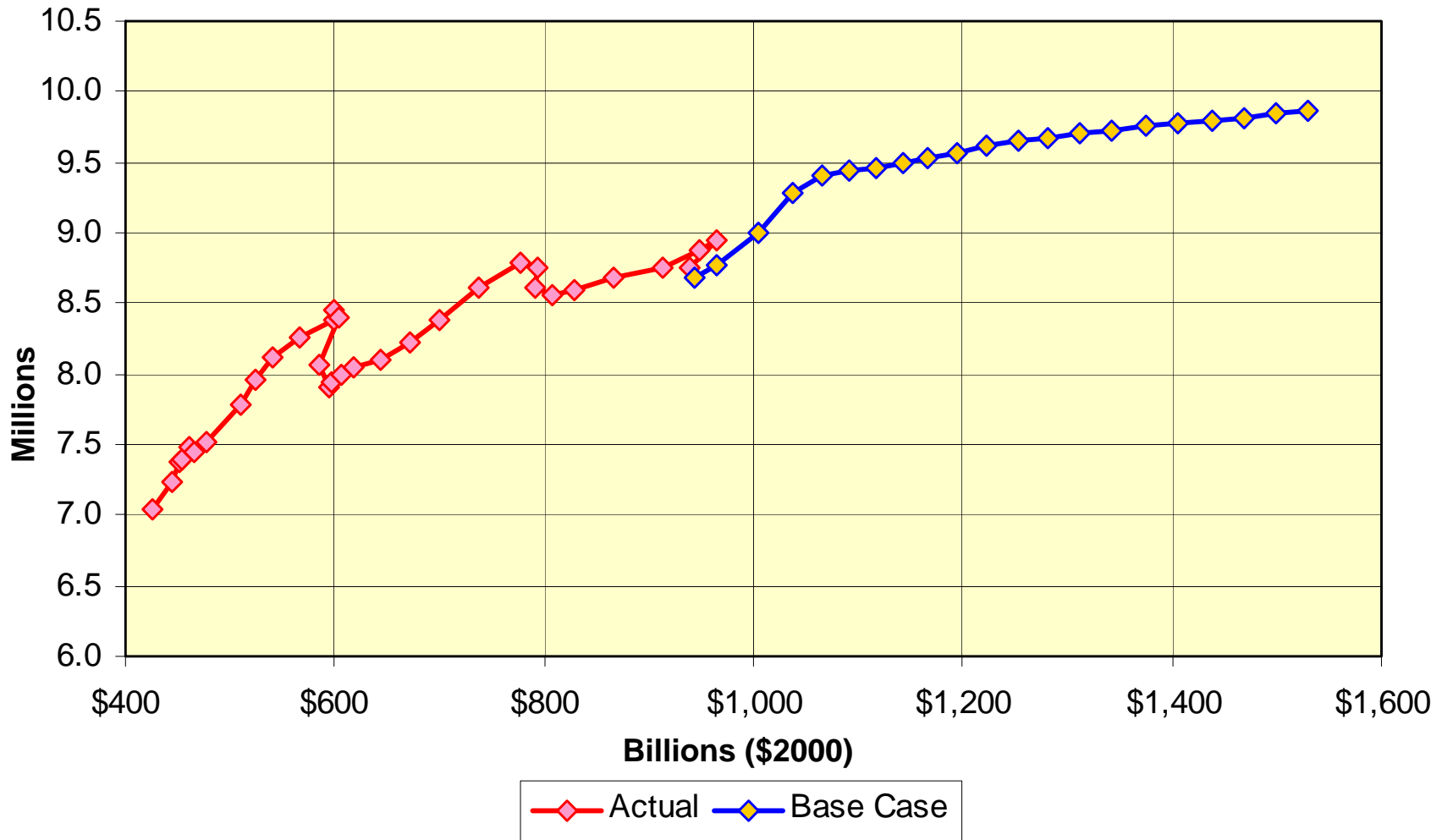
## Growth since 1990

Change from '90	GWh	Real GDP	Employment	Population
2000	11%	29%	5%	5.4%
2010	14%	56%	3%	8.5%
2020	33%	102%	14%	9.6%
2030	48%	153%	18%	10.1%

Energy forecast is the 2010 econometric forecast, before reductions from statewide energy efficiency programs.

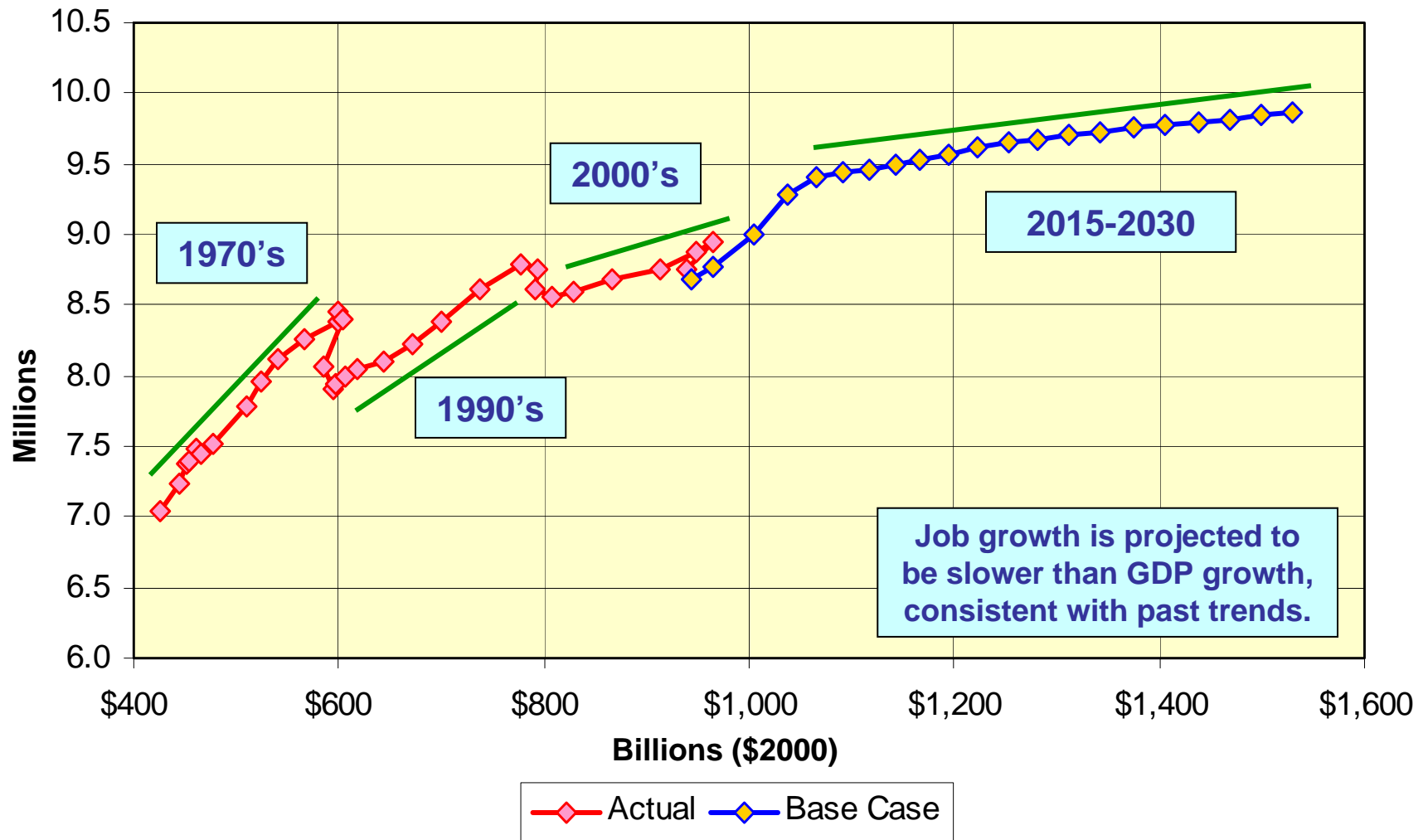
Economic data from Moody's Analytics

### NY Employees vs NY GDP 1975 to 2030

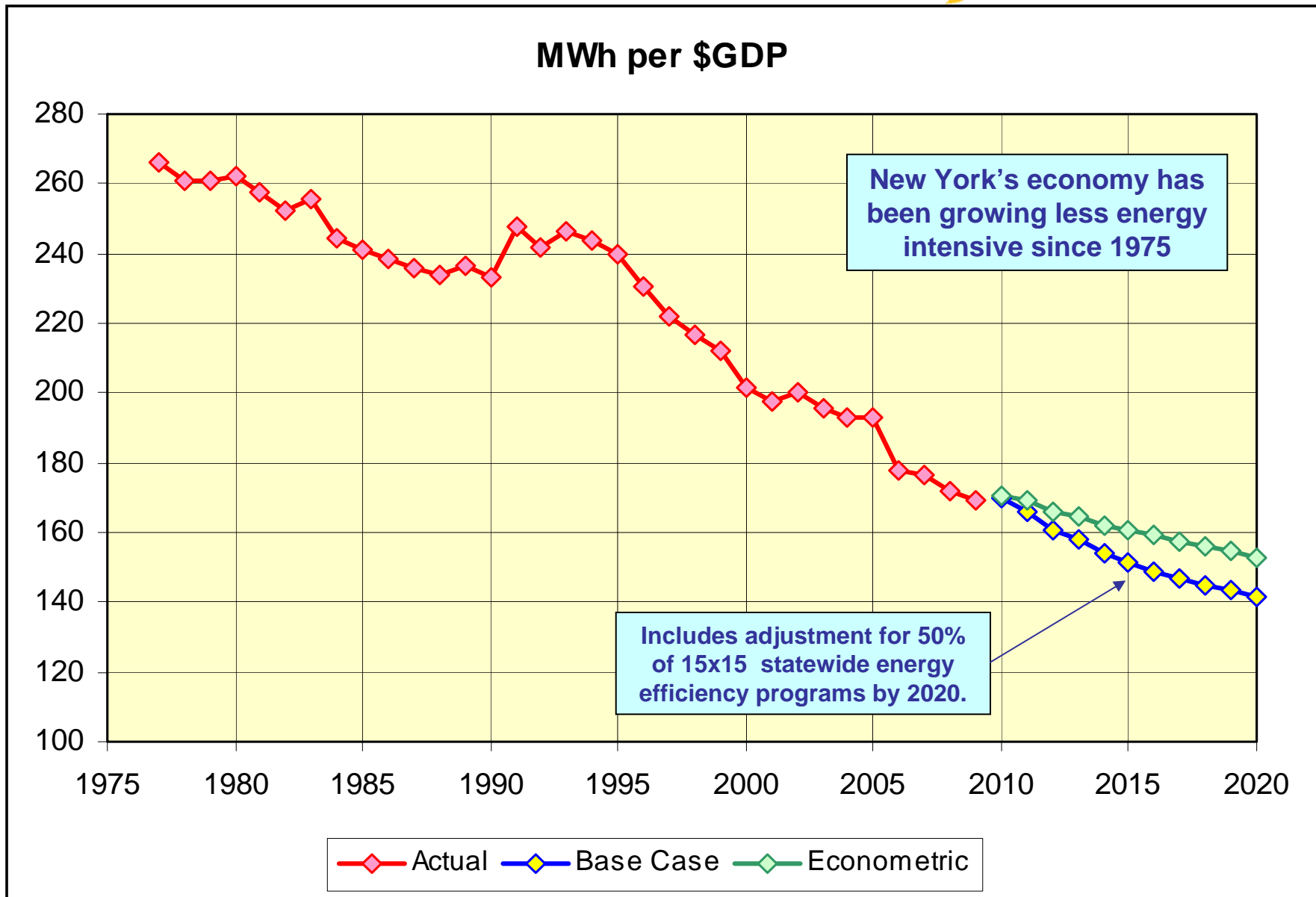


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## NY Employees vs NY GDP 1975 to 2030



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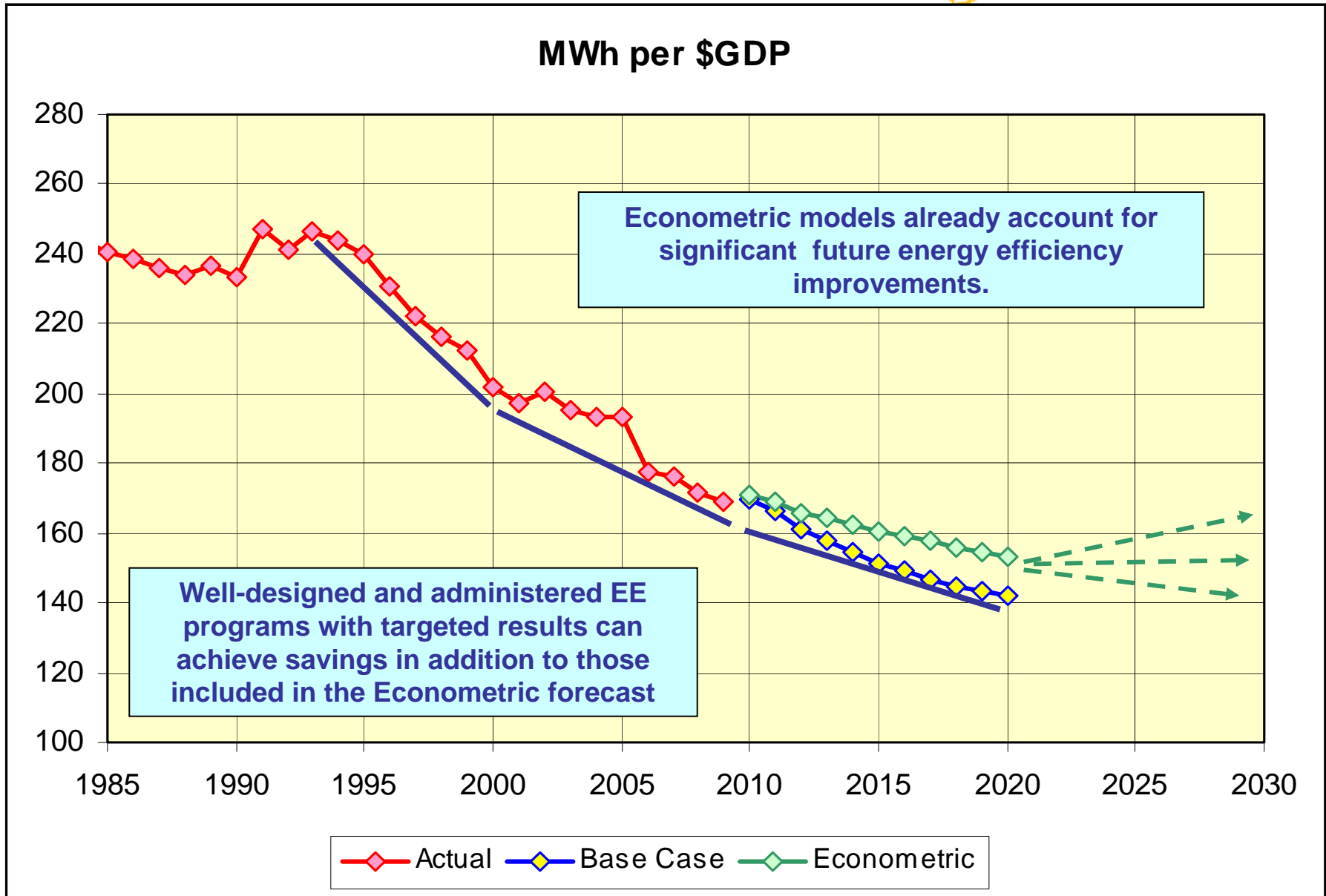


Economic data from Moody's Analytics

# Key Points

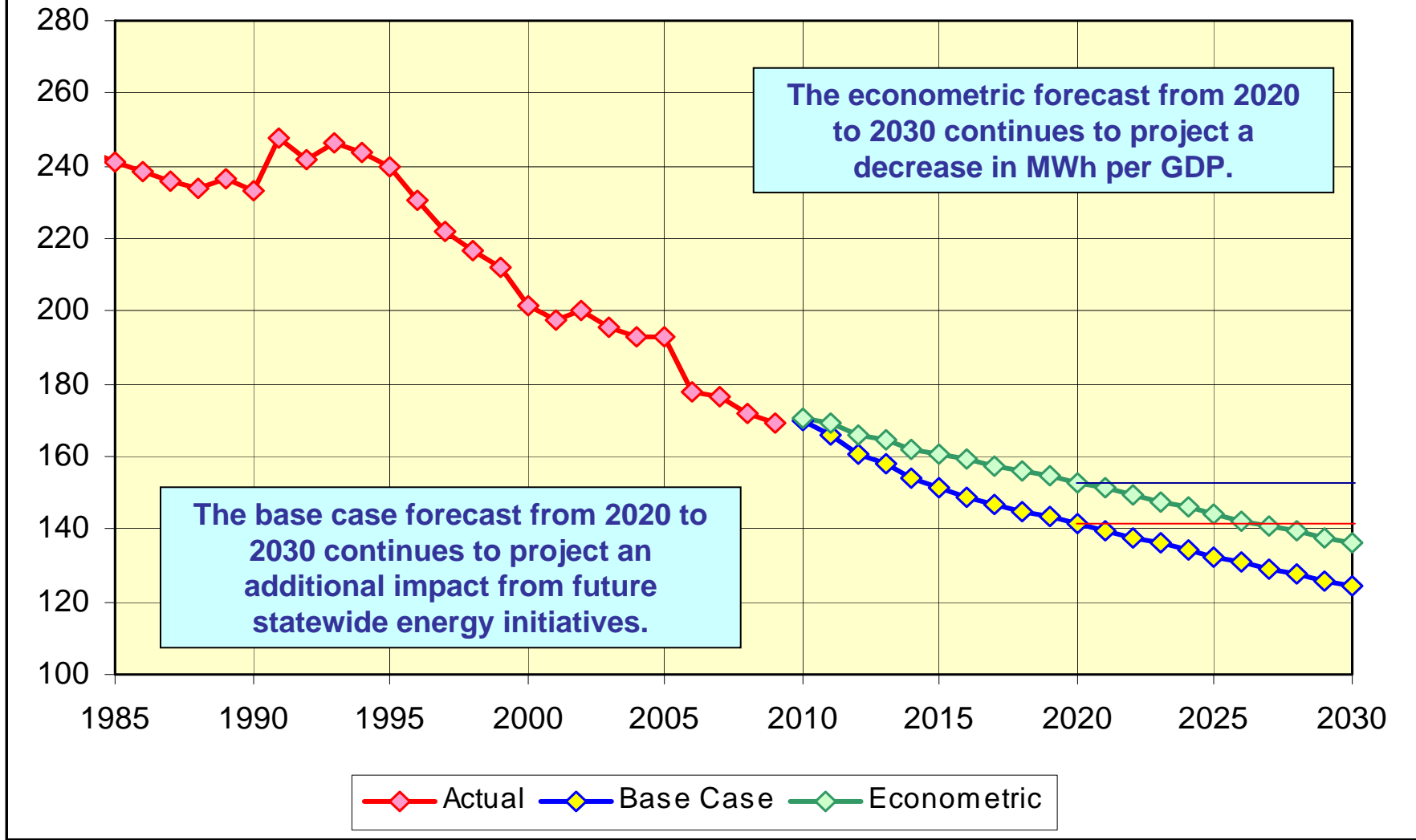
- ◆ Energy Intensity per Employee continues to increase.
  - *Explained by long term trend of substitution of equipment for labor, in those sectors which are still energy intensive*
- ◆ Energy Intensity per Dollar of GDP continues to decrease.
  - *Economy is moving away from manufacturing & heavy industry, toward service & information sectors*
  - *All aspects of the economy are moving toward electronic processes of goods & services and away from fossil-based processes*
- ◆ Economy continues to transform toward higher information content, lower use of human labor and lower use of fossil energy.
  - *The labor-intensive industrial economy continues to move via globalizaton and technological innovation to an information-intensive economy*
  - *Technological innovation also likely to drive gains in energy efficiency*
- ◆ Information economy implicitly moves in direction of lower cost, higher value products and activities, with increasing energy efficiency, compared to industrial economy.
- ◆ Therefore, econometric models implicitly include large-scale improvements in energy efficiency due to growing shift to information economy.

***Does not include impact of energy intensive technology such as PHEVs which are not included in the econometric forecast.***



Economic data from Moodys Analytics

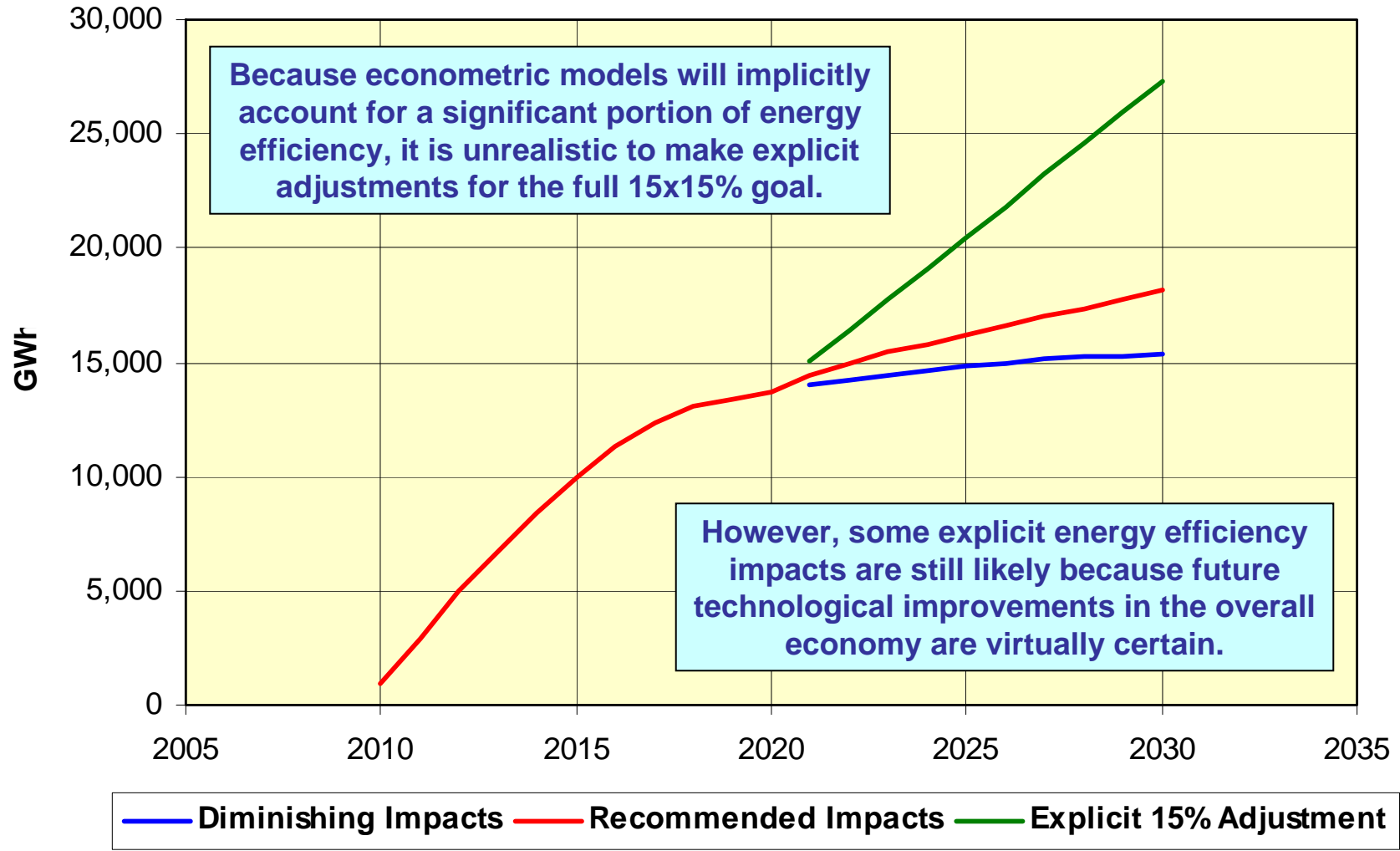
### MWh per \$GDP



Economic data from Moody's Analytics



## Future Impacts of Energy Efficiency Programs *Three Cases*





The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for state's bulk electricity system.

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***[www.nyiso.com](http://www.nyiso.com)***