Energy, Economic
and
Environmental Indicators

All U.S. States
& Select Extra Graphs

AUGUST, 2018

Energy, Economic and Environmental Indicators

Contents

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Graphs:

USA

RGGI States (Regional Greenhouse Gas Initiative participating states)

New England States

50 States / District of Columbia (in alpha order, A-Z)

Purpose / Acknowledgements

E4TheFuture commissioned this set of graphs from Synapse Energy Economics to demonstrate an indisputable trend over twenty-five years: Economic outputs have risen in the United States while greenhouse gas pollutants decreased. With the following graphs — all created using a consistent scale — comparisons among states are easily and quickly illuminated. Review of the data enables certainty: Investing in energy efficiency and clean energy has significantly boosted US economic growth, while also contributing to economic equity and long term health improvements. The facts speak for themselves.

Each state's rank in ACEEE's *State Energy Efficiency Scorecard* appears above the graph to enable additional comparisons.

About Synapse Energy Economics, Inc.

Synapse Energy Economics is a research and consulting firm specializing in energy, economic, and environmental topics. Since its inception in 1996, Synapse has become a leader in providing rigorous analysis of the electric power sector for public interest and governmental clients. Its staff includes experts in energy and environmental economics, resource planning, electricity dispatch and economic modeling, energy efficiency, renewable energy, transmission and distribution, rate design and cost allocation, risk management, cost-benefit analysis, environmental compliance, climate science, and both regulated and competitive electricity and natural gas markets. Services provided include economic and technical analyses, regulatory support, research and report writing, policy analysis and development, representation in stakeholder committees, facilitation, trainings, development of analytical tools, and expert witness services. Synapse is committed to the idea that robust, transparent analyses can help to inform better policy and planning decisions. Visit www.synapse-energy.com.

About E4TheFuture, Inc.

E4TheFuture is a small nonprofit organization that promotes residential clean energy and sustainable resource solutions to advance climate protection and economic fairness by influencing federal, state and local policies, and by helping to build a resilient and vibrant energy efficiency and clean energy sector. "E4" stands for energy, economy, equity, and environment.

Tracked Data Points:

* Population
* GDP (Gross Domestic Product) - USA Graph only
* GSP (Gross State Product)
* Energy Use
* Industrial Energy
* Total GHG
* Electric GHG
* Electric Consumption

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Context

Since 1990, the US economy became much more efficient, producing high volumes of economic output with less energy use and fewer emissions. Tracking publicly available metrics over time provides an invaluable method to assess progress of the combined impact of public policies at both national and state levels.

1990 is an appropriate baseline because:

1. Over the last three decades, and particularly over the last decade, economic growth frequently has occurred independent of electric load growth or increased reliance upon fossil fuel consumption.

2. Many local, national, and international climate targets were set as reductions in greenhouse gas emissions from 1990.

Between 1990 and 2015, national Gross Domestic Product (GDP) more than doubled, population grew by nearly a third, electricity use increased by 40 percent, and sector-wide industrial energy use increased by 15 percent. Yet after rising during the 1990s-2000s, nation-wide emissions fell in the past decade to be only 4 percent higher than emissions in 1990. These trends become even more apparent when focusing on changes to economic and environmental indicators following the 2008-09 recession. While cumulative Gross State Product (GSP) grew by 10 percent from 2010-15, energy use and electricity consumption both remained flat, and nationwide emissions dropped by 6 percent. Since the recession, the economy grew while emissions declined substantially.

Data Sources

Census population data comes from three different sources:

 1990-2000: https://www2.census.gov/programs-surveys/popest/tables/1990-2000/intercensal/st-co/co-est2001-12-00.pdf

 2000-2010: https://www2.census.gov/programs-surveys/popest/tables/2000-2010/intercensal/state/st-est00int-01.xls

 2010-2017: https://www2.census.gov/programs-surveys/popest/tables/2010-2017/state/totals/nst-est2017-01.xlsx

EIA State Energy Data System (SEDS) database:

 http://www.eia.gov/state/seds/sep_use/total/csv/use_all_btu.zip includes: Gross State Product (GSP), Statewide Energy Use, Industrial Energy Use

Emissions:

 https://www.eia.gov/environment/emissions/state/excel/summary_2015.xlsx
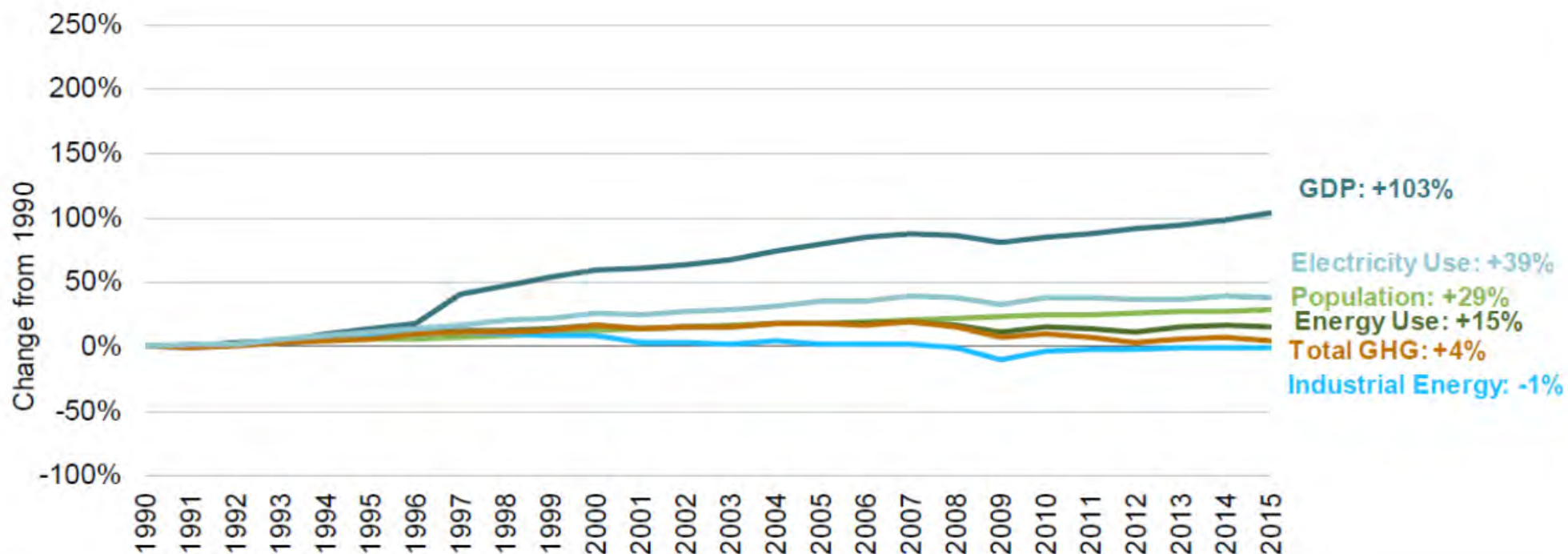
Electric consumption is also from the EIA:

 https://www.eia.gov/electricity/data/state/sales_annual.xlsx

State Scorecard Ranking: Each state graph is accompanied by its *State Energy Efficiency Scorecard* rank in 2017, by ACEEE.

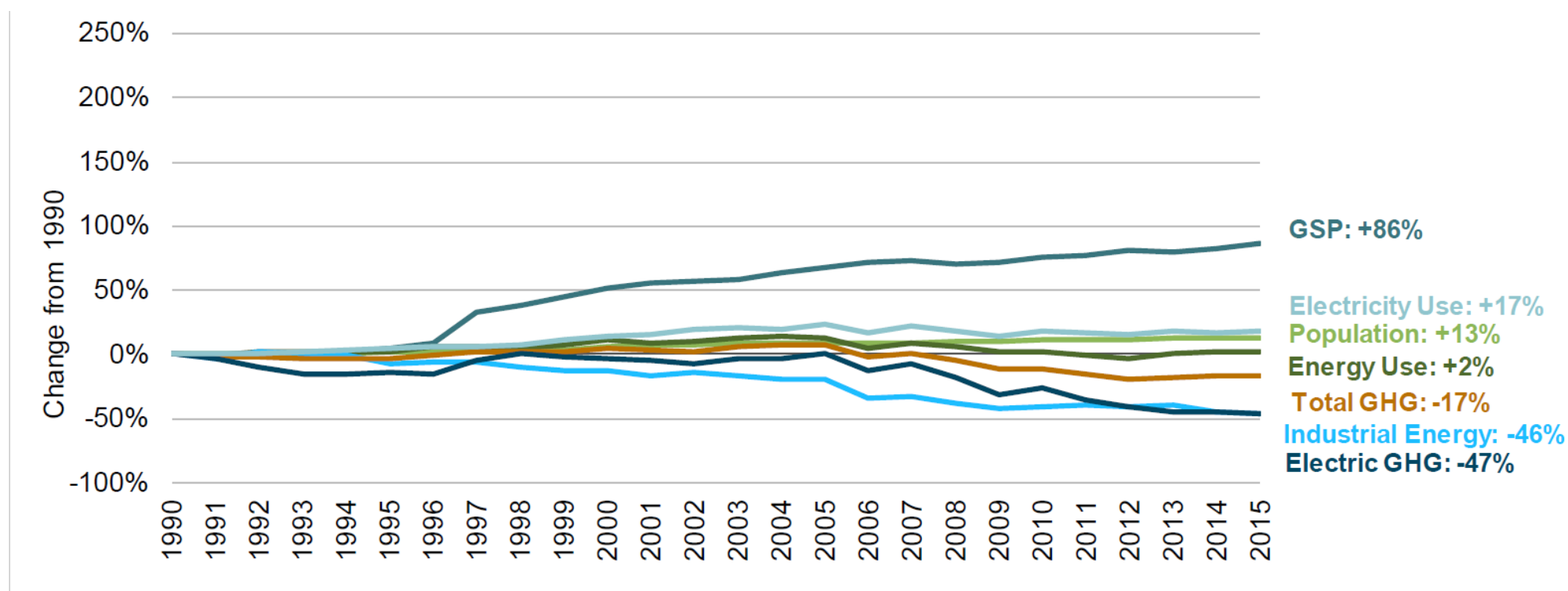# Energy, Economic and Environmental Indicators

USA
1990-2015

- GDP: +103%
- Electricity Use: +39%
- Population: +29%
- Energy Use: +15%
- Total GHG: +4%
- Industrial Energy: -1%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Regional Greenhouse Gas Initiative (RGGI) States

1990-2015

GSP: +86%

Electricity Use: +17%
Population: +13%
Energy Use: +2%
Total GHG: -17%
Industrial Energy: -46%
Electric GHG: -47%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

States include: CT, DE, MA, MD, ME, NH, NY, RI, VT

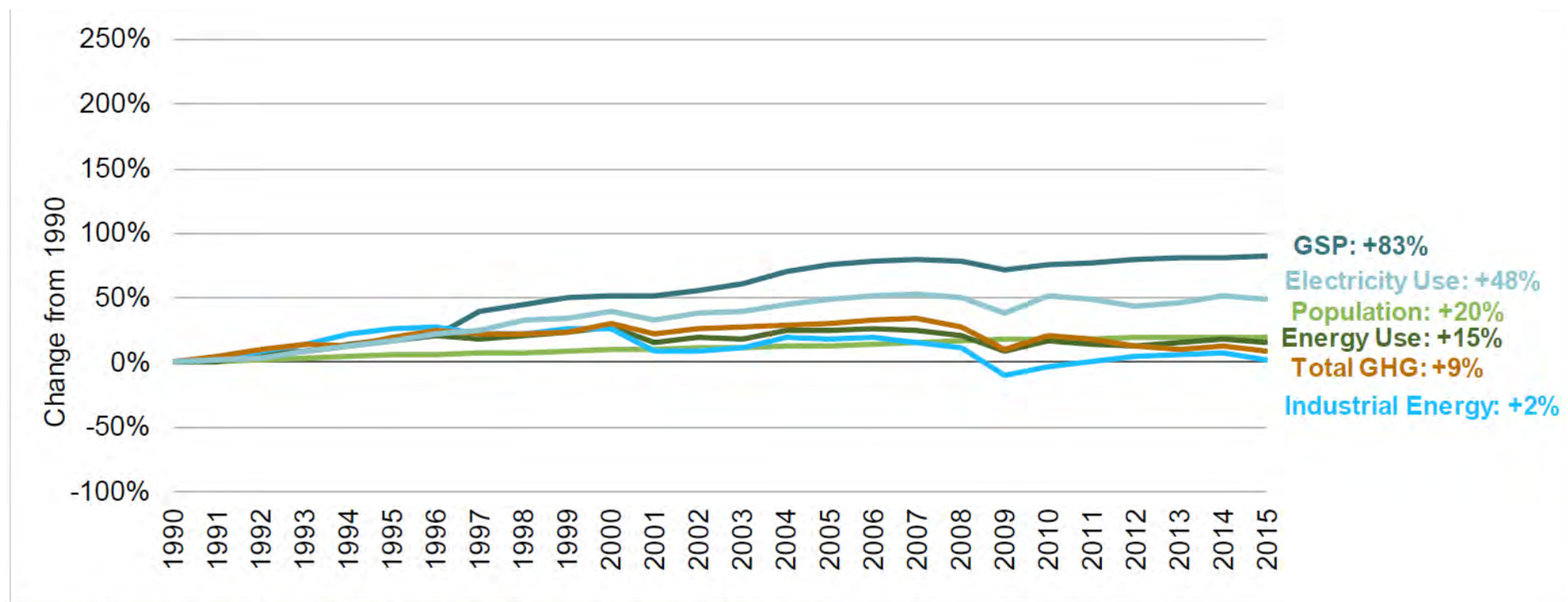# Energy, Economic and Environmental Indicators

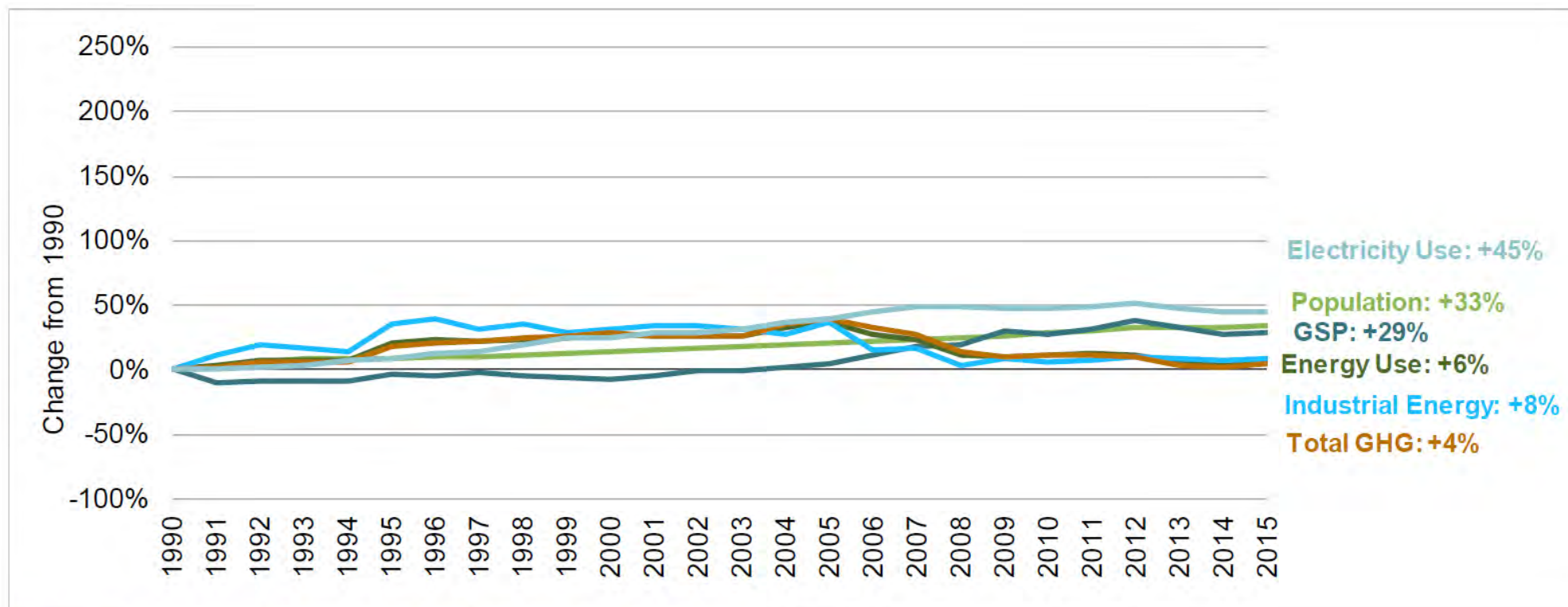
New England States
1990-2015
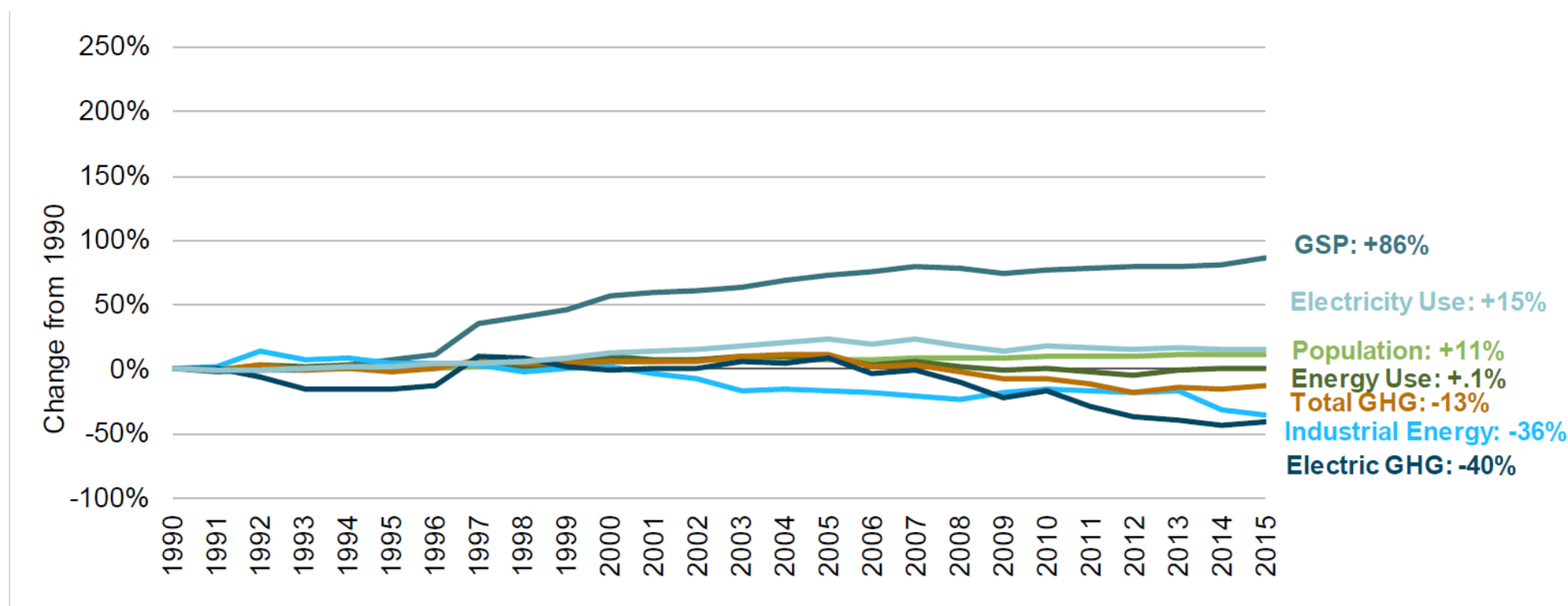
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

States include: CT, MA, ME, NH, RI, VT

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Alabama
1990-2015

GSP: +83%
Electricity Use: +48%
Population: +20%
Energy Use: +15%
Total GHG: +9%
Industrial Energy: +2%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Alaska
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Arizona
1990-2015

GSP: +193%

Electricity Use: +87%
Population: +85%

Energy Use: +53%
Total GHG: +45%
Industrial Energy: +26%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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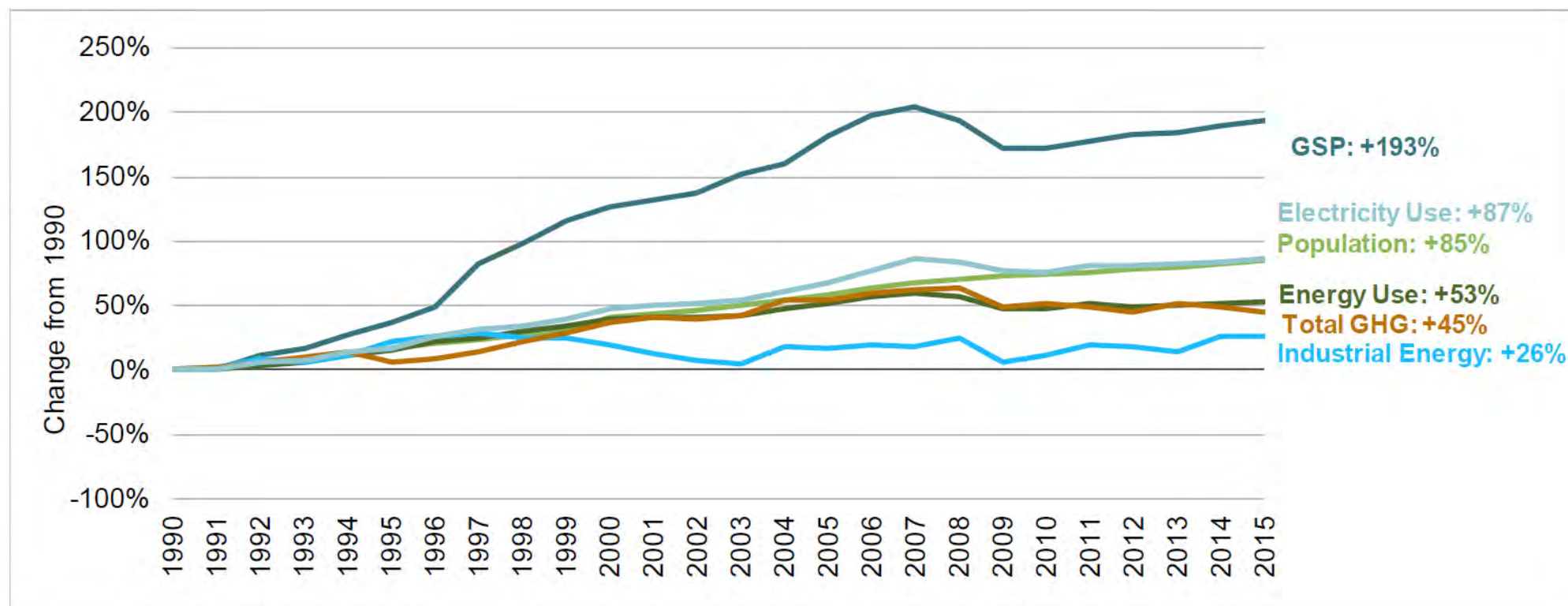
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Arkansas
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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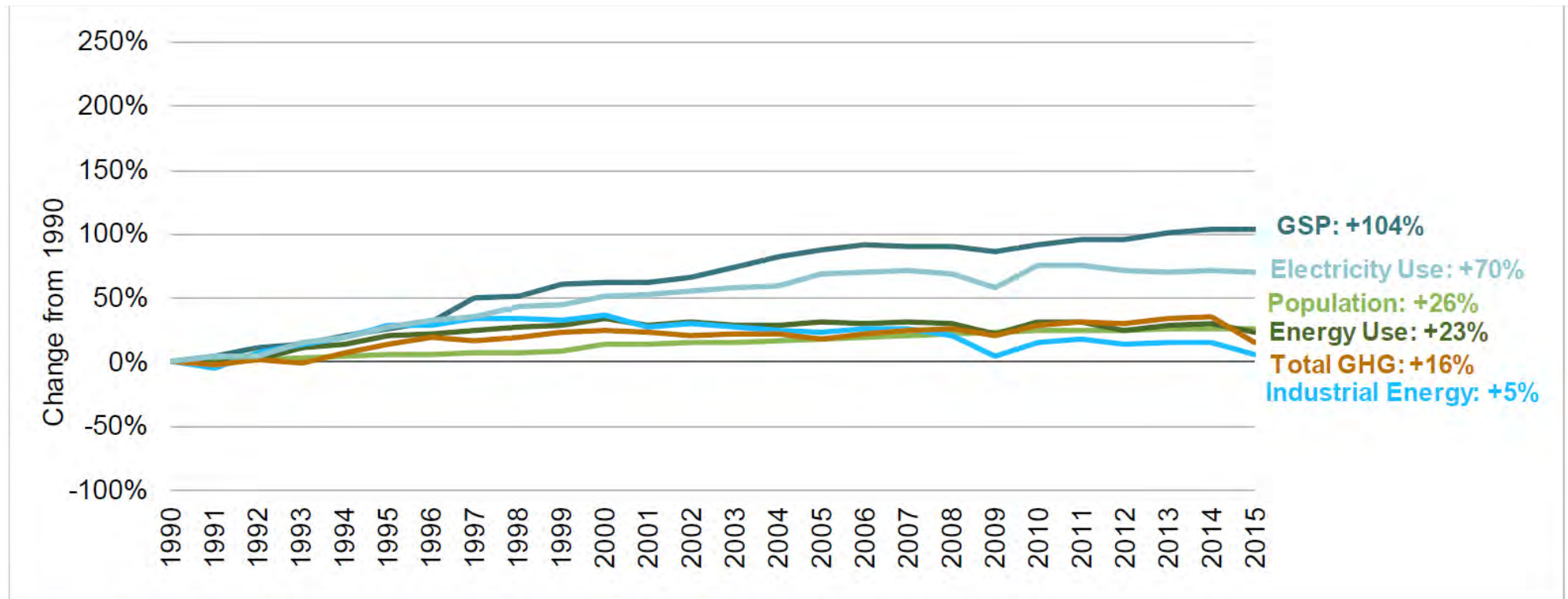
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California
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Colorado
1990-2015

GSP: +173%
Industrial Energy: +109%
Electricity Use: +76%
Population: +65%
Energy Use: +59%
Total GHG: +38%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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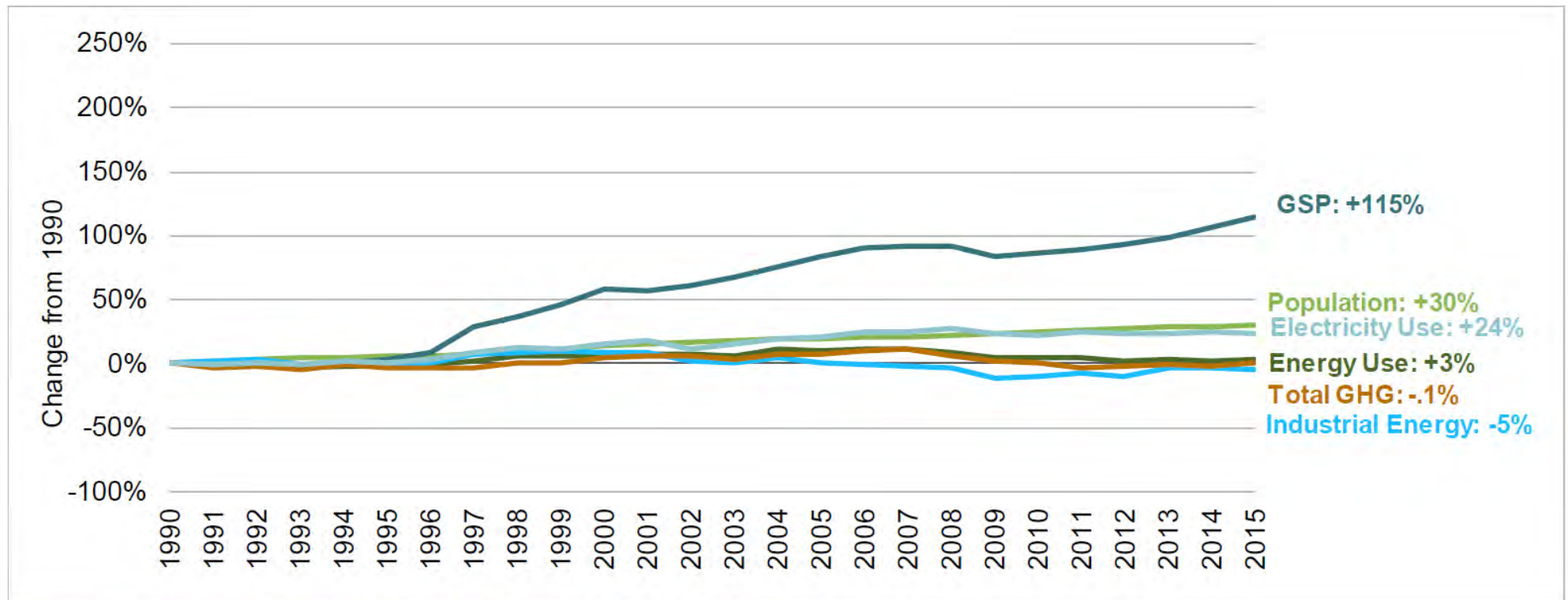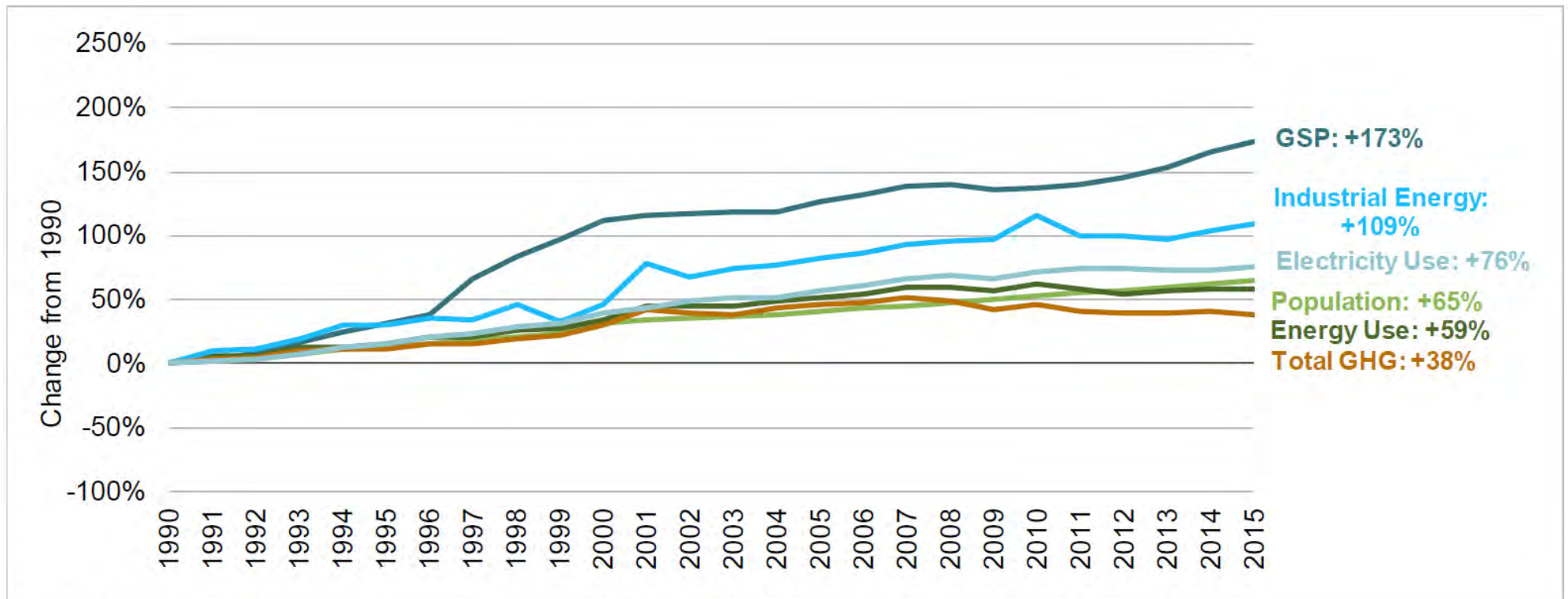
Connecticut
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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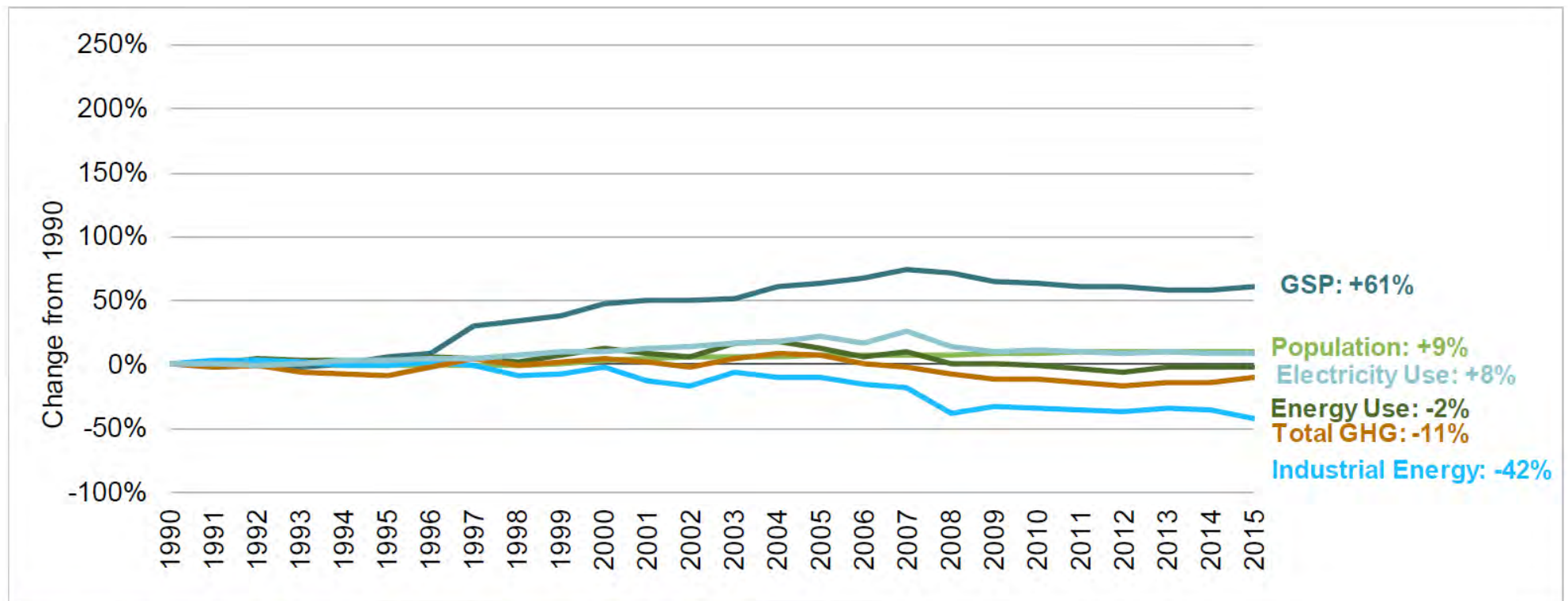
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Delaware
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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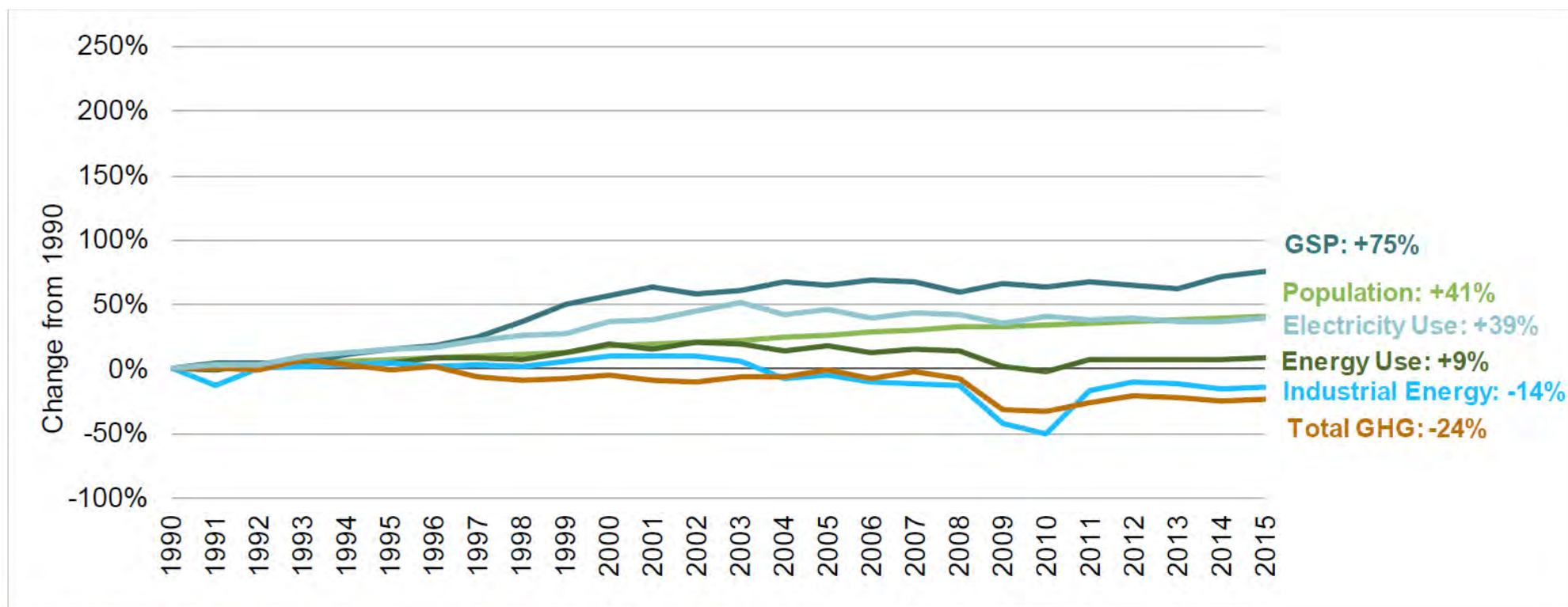
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District of Columbia
1990-2015
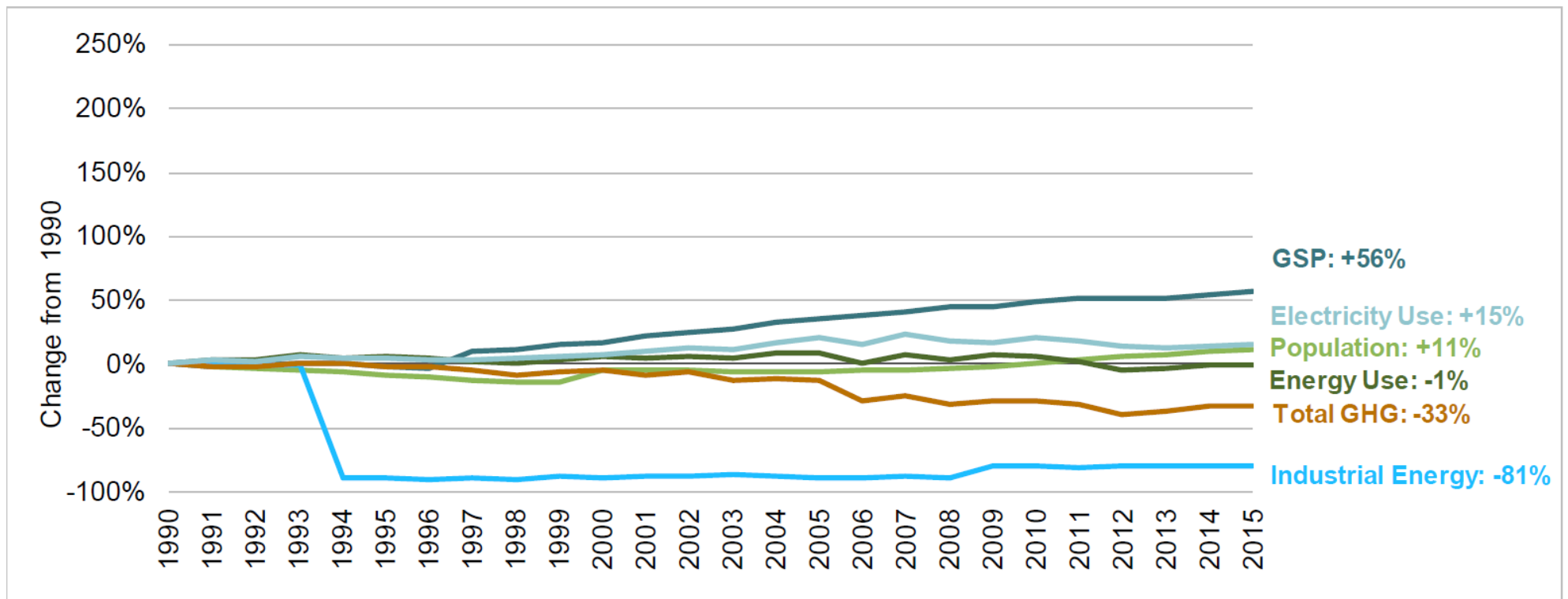
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Florida
1990-2015

GSP: +114%

Electricity Use: +64%
Population: +56%
Energy Use: +29%
Total GHG: +23%
Industrial Energy: -8%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Georgia
1990-2015

GSP: +127%
Electricity Use: +69%
Population: +57%
Energy Use: +28%
Total GHG: -2%
Industrial Energy: -3%
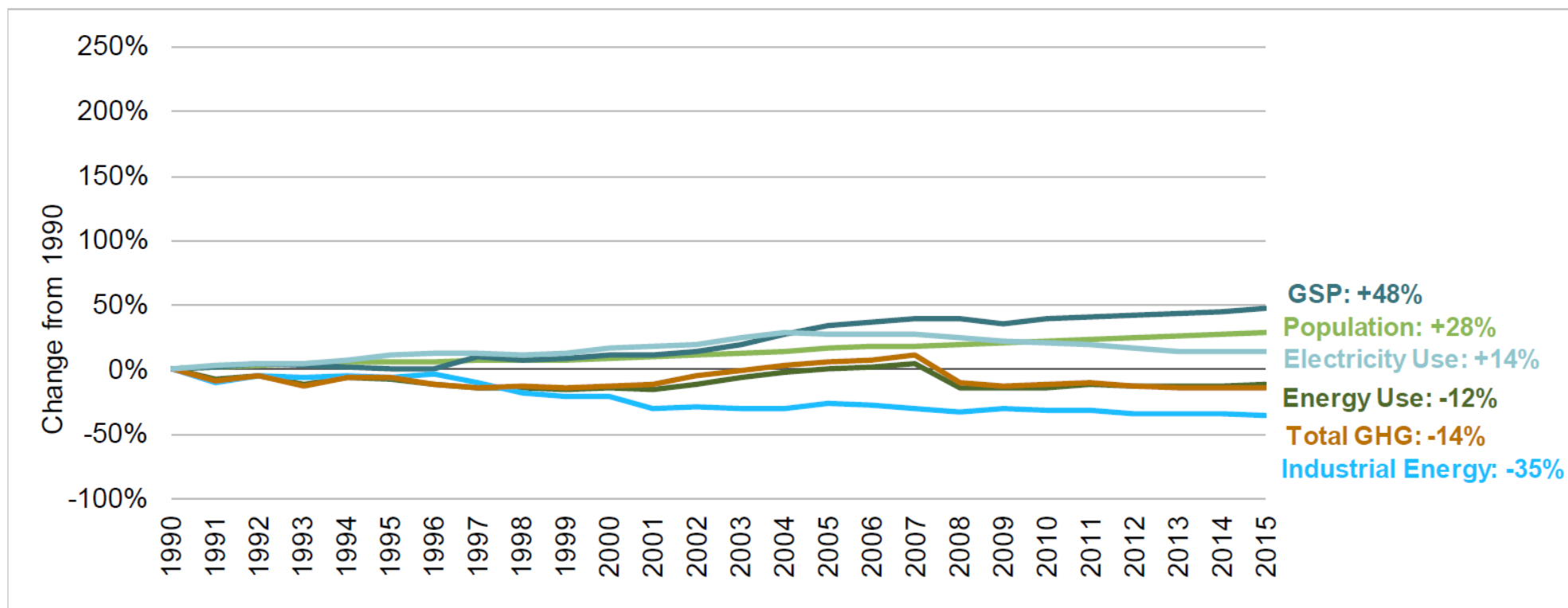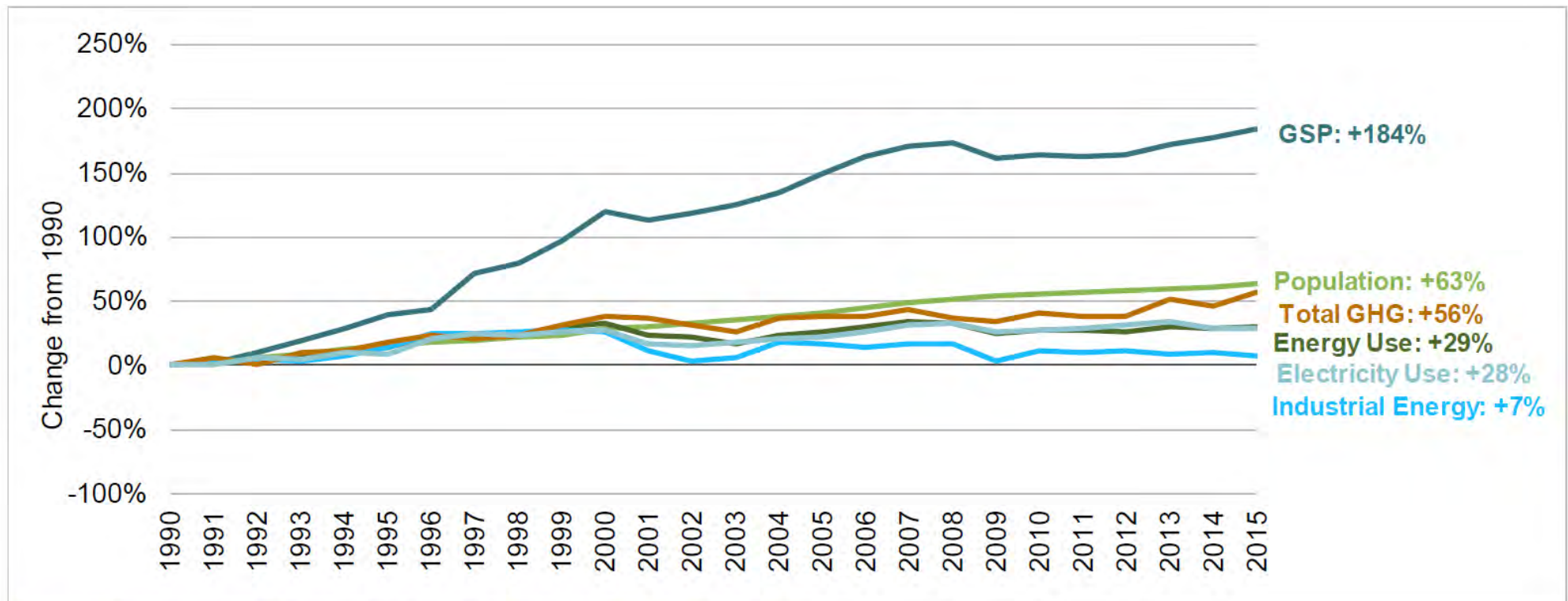
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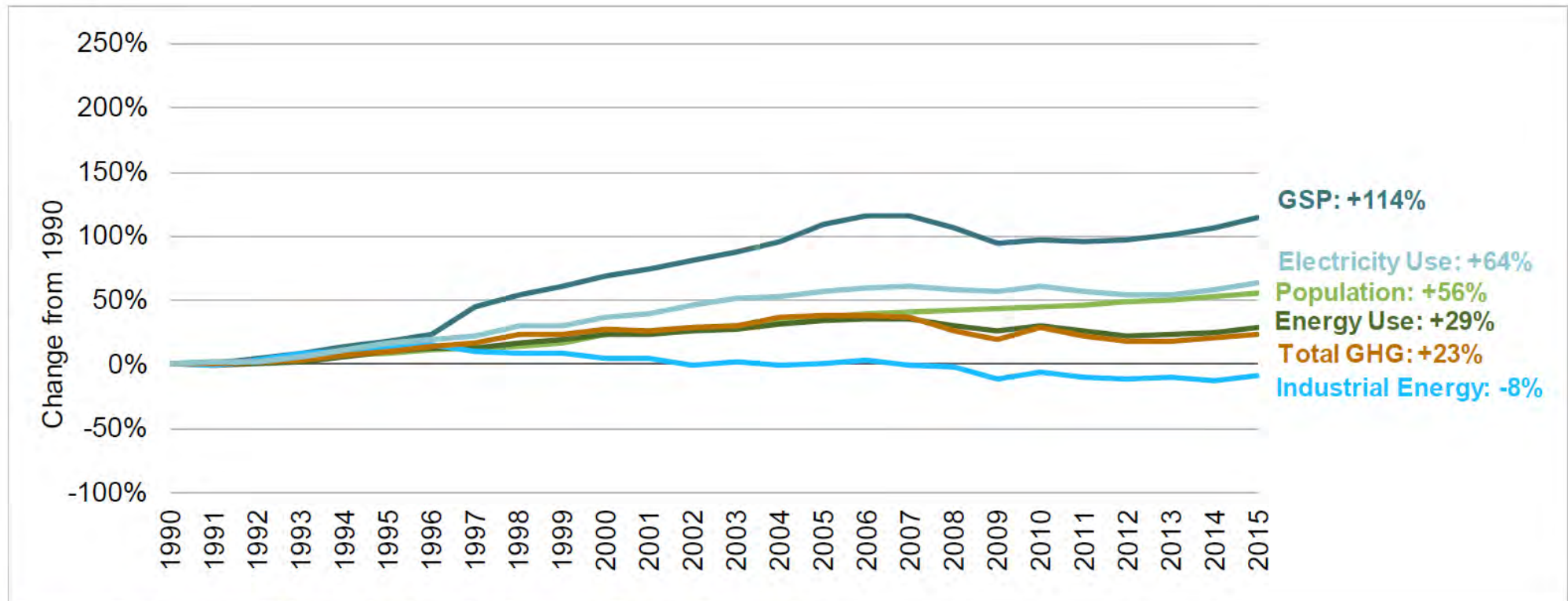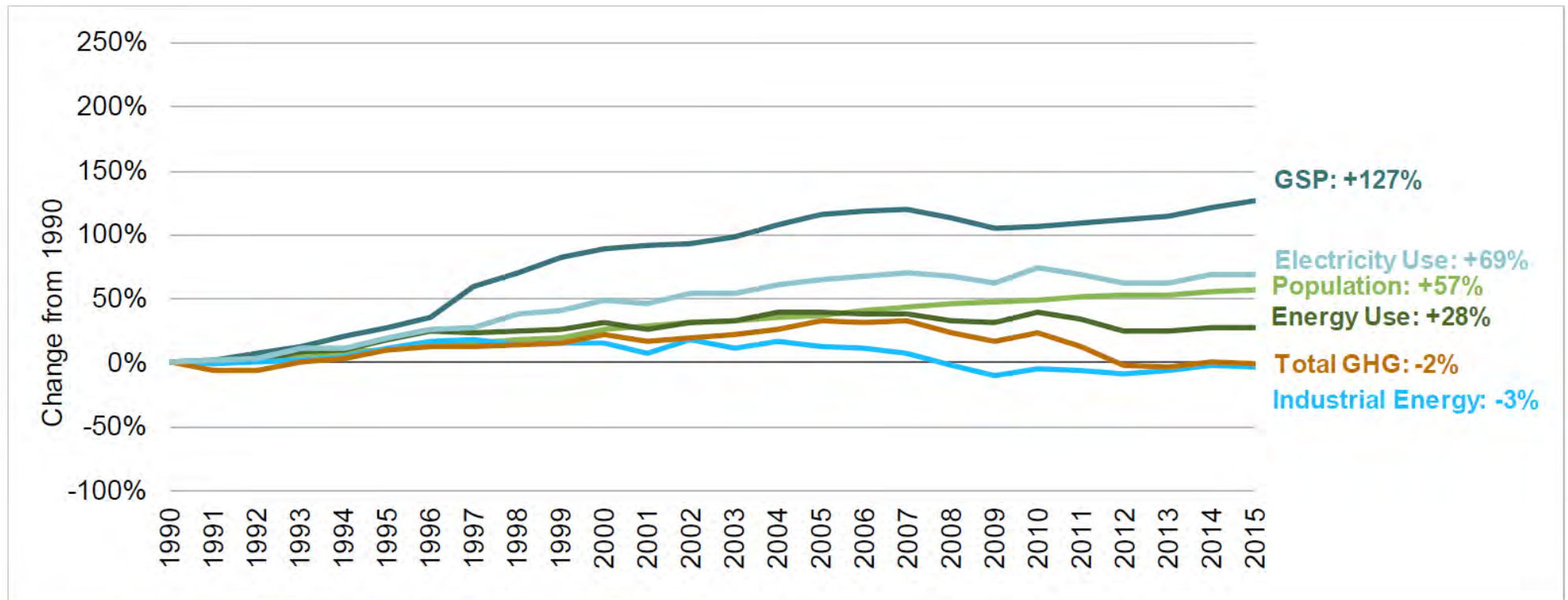
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Hawaii
1990-2015

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Idaho
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Illinois
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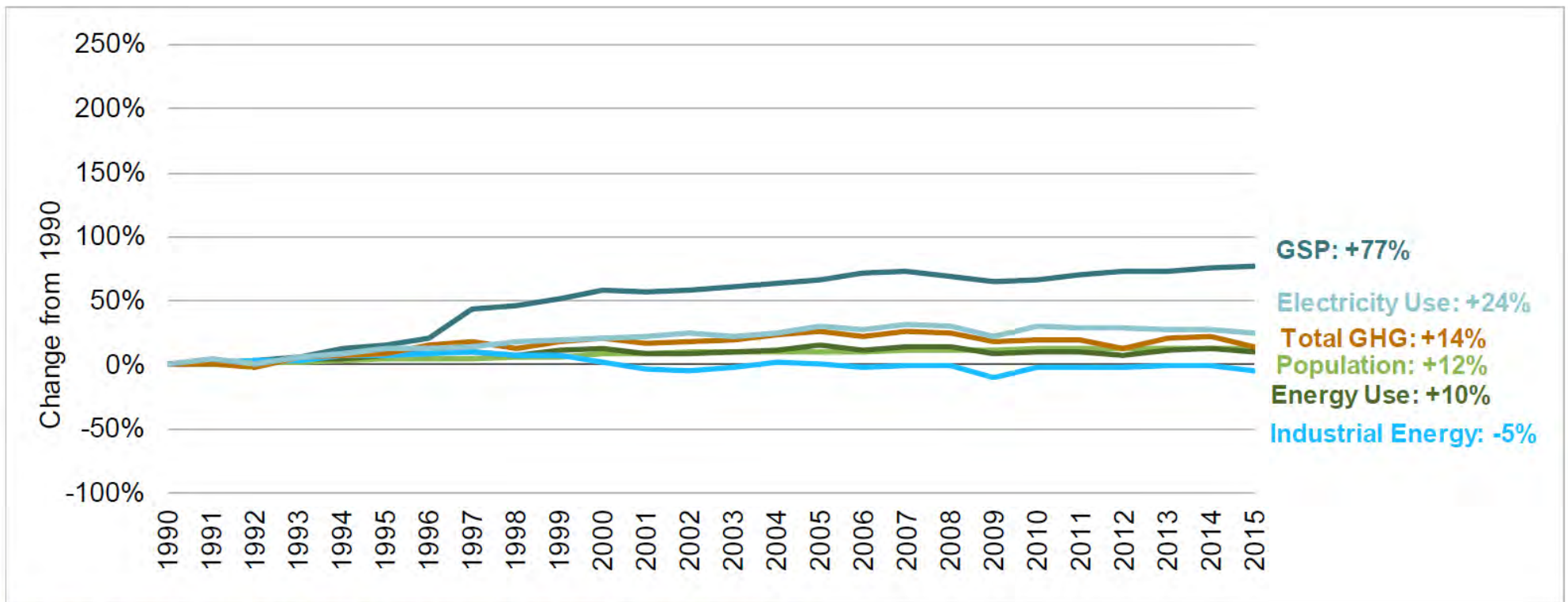
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Indiana
1990-2015
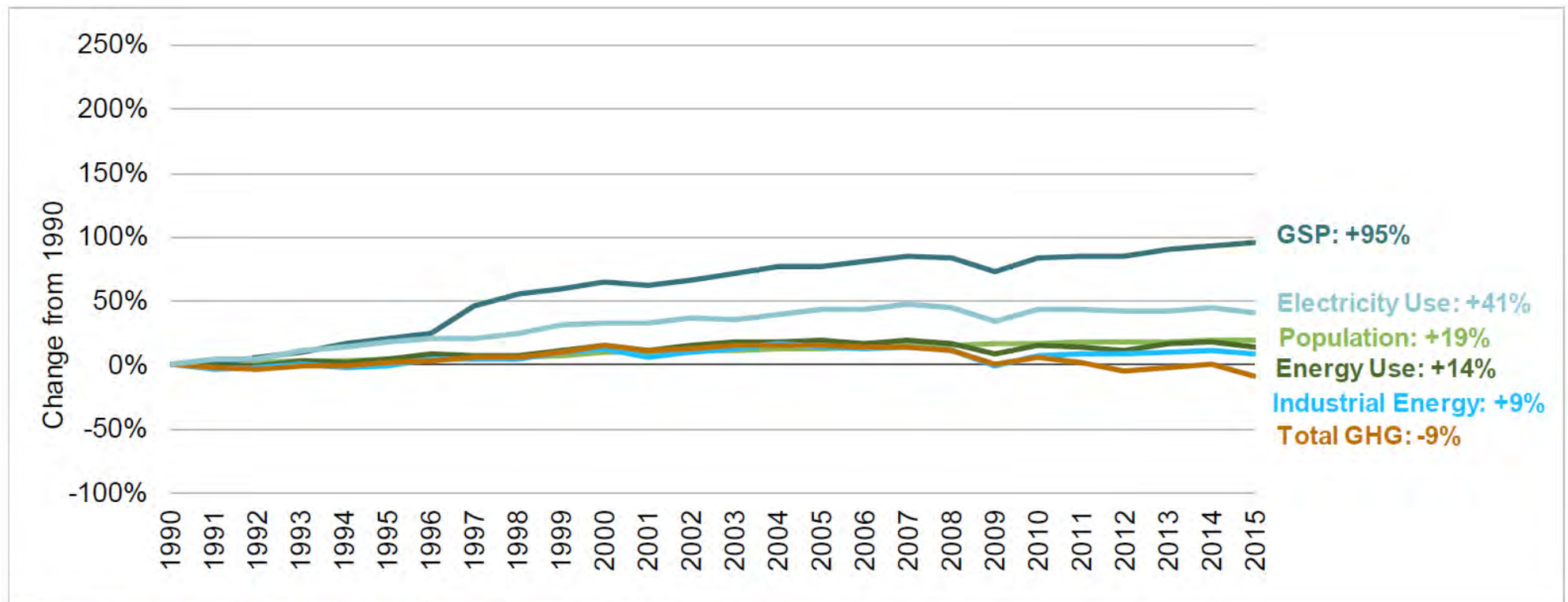
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Iowa
1990-2015

GSP: +112%
Industrial Energy: +107%
Electricity Use: +60%
Energy Use: +58%
Total GHG: +26%
Population: +12%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Kansas
1990-2015

GSP: +88%
Electricity Use: +47%
Population: +17%
Energy Use: +2%
Total GHG: -10%
Industrial Energy: -11%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Kentucky
1990-2015

GSP: +83%
Electricity Use: +24%
Population: +20%
Energy Use: +18%
Total GHG: +9%
Industrial Energy: -2%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Louisiana
1990-2015

Electricity Use: +44%
GSP: +43%
Industrial Energy: +13%
Population: +11%
Energy Use: +10%
Total GHG: +10%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Maine
1990-2015

GSP: +53%
Population: +8%
Electricity Use: +3%
Energy Use: -11%
Total GHG: -12%
Industrial Energy: -40%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Maryland
1990-2015

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Massachusetts
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Michigan
1990-2015

GSP: +54%
Electricity Use: +24%
Population: +7%
Energy Use: -4%
Total GHG: -10%
Industrial Energy: -29%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Minnesota
1990-2015

GSP: +112%

Electricity Use: +41%
Energy Use: +26%
Population: +25%
Industrial Energy: +13%
Total GHG: +11%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Mississippi
1990-2015

GSP: +77%
Electricity Use: +52%
Total GHG: +33%
Population: +16%
Energy Use: +10%
Industrial Energy: -12%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Missouri
1990-2015

GSP: +78%
Electricity Use: +51%
Energy Use: +23%
Total GHG: +20%
Population: +18%
Industrial Energy: +12%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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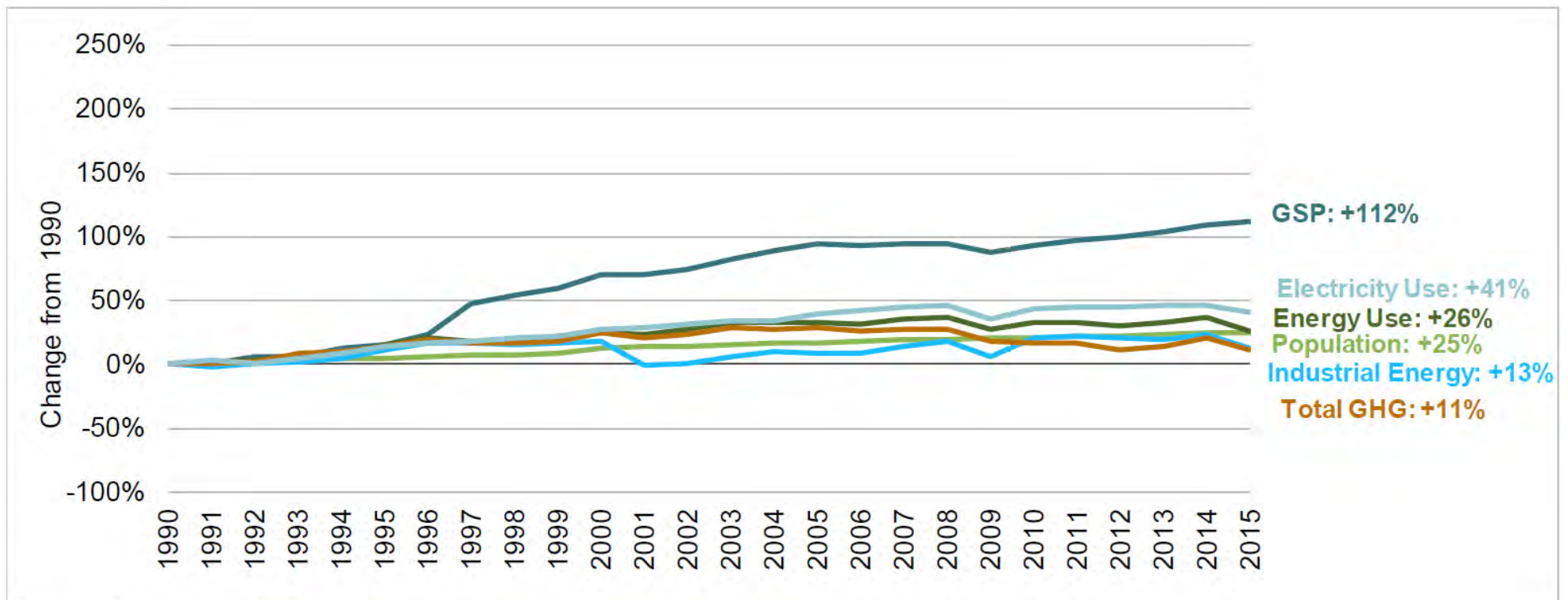
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Montana
1990-2015
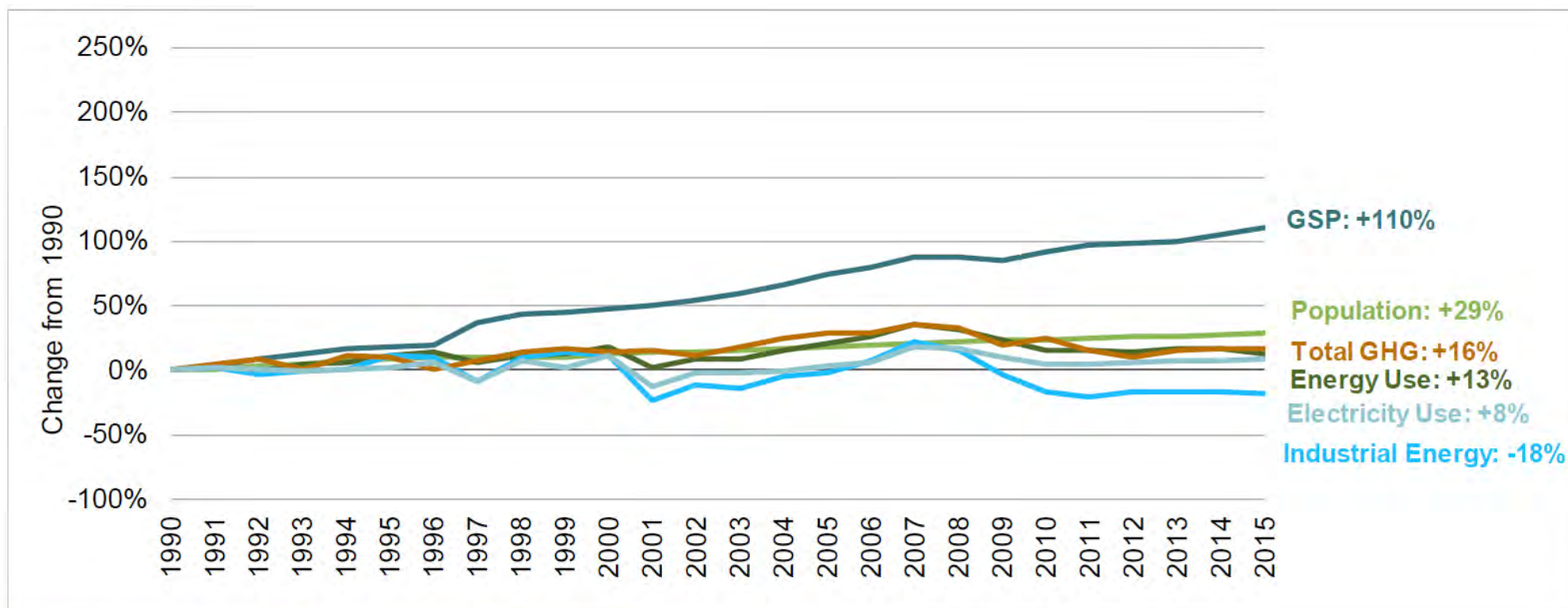
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Nebraska
1990-2015
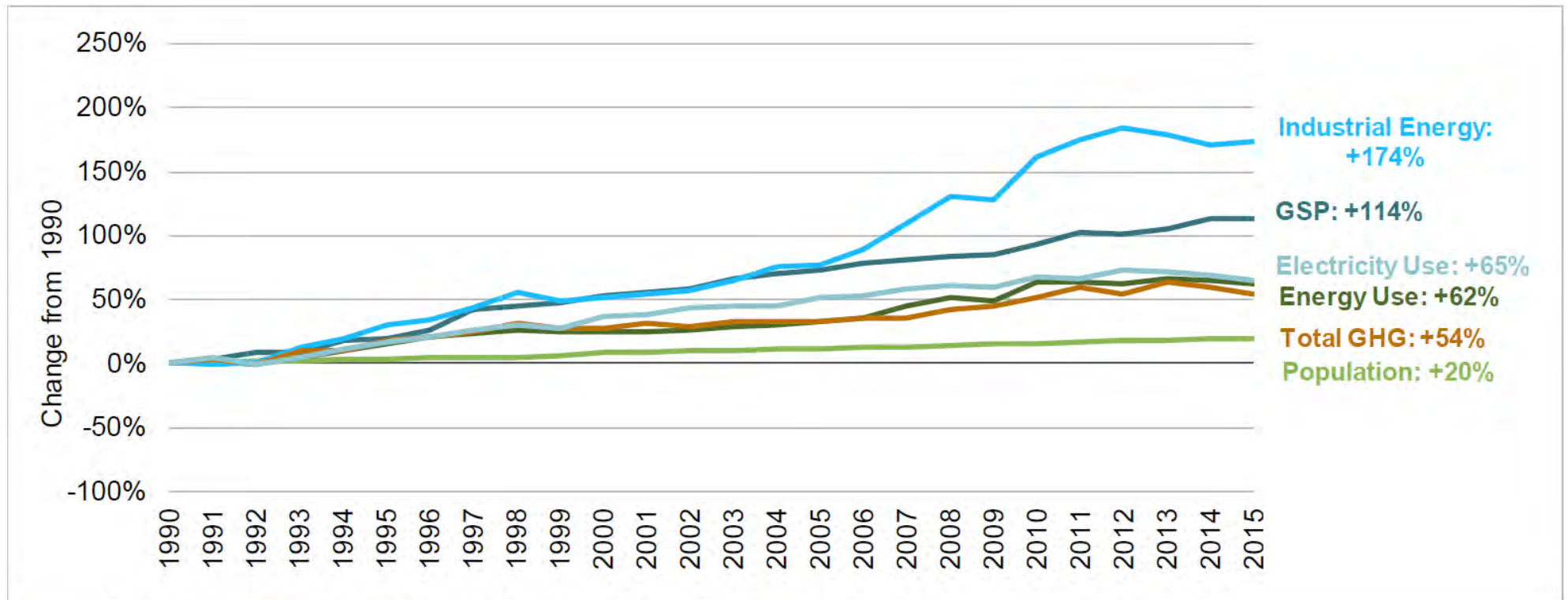
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Nevada
1990-2015
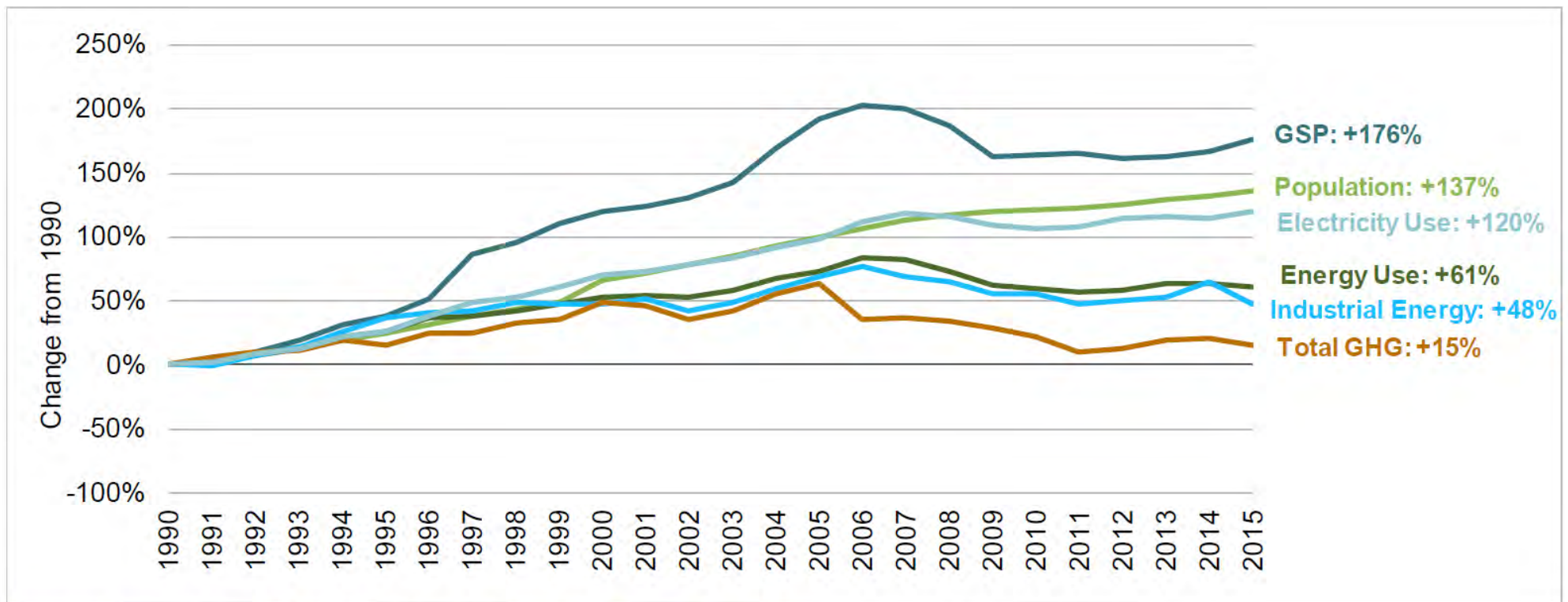
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New Hampshire
1990-2015

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New Jersey
1990-2015

GSP: +63%
Electricity Use: +20%
Population: +16%
Energy Use: +2%
Total GHG: +2%
Industrial Energy: -43%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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New Mexico
1990-2015

GSP: +175%
Electricity Use: +67%
Population: +37%
Industrial Energy: +17%
Energy Use: +13%
Total GHG: -6%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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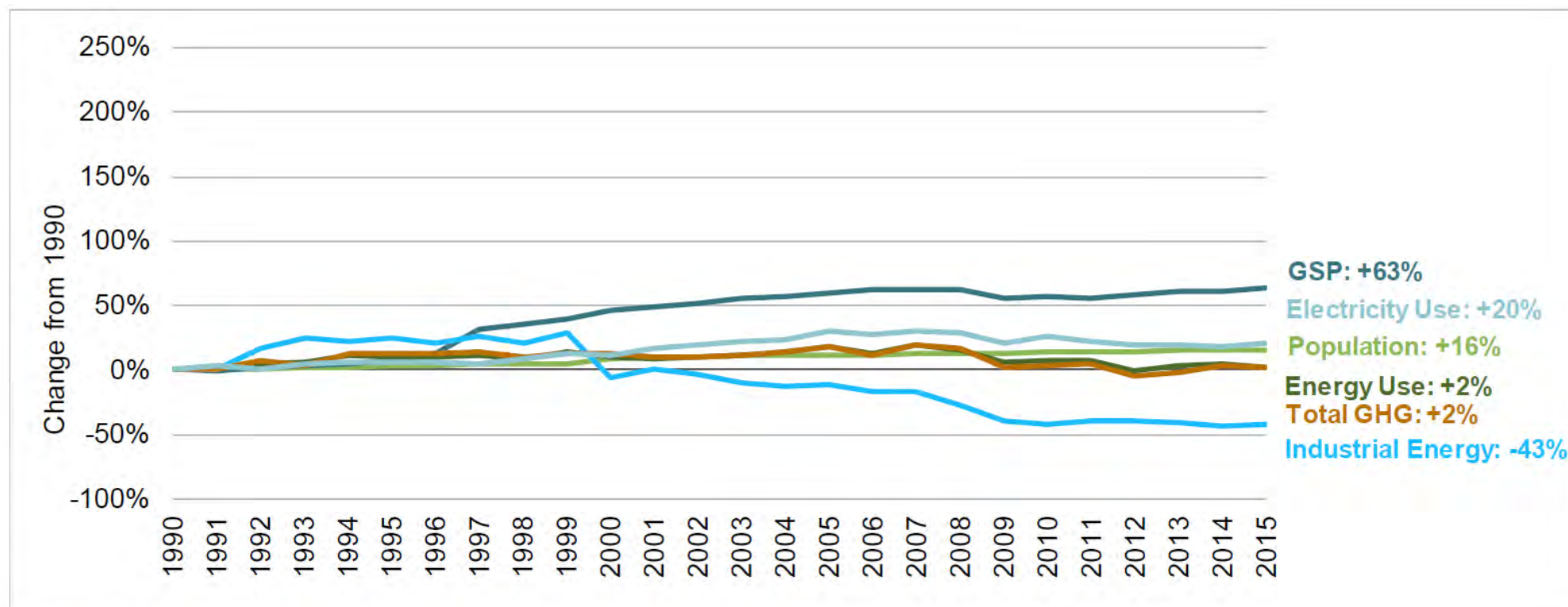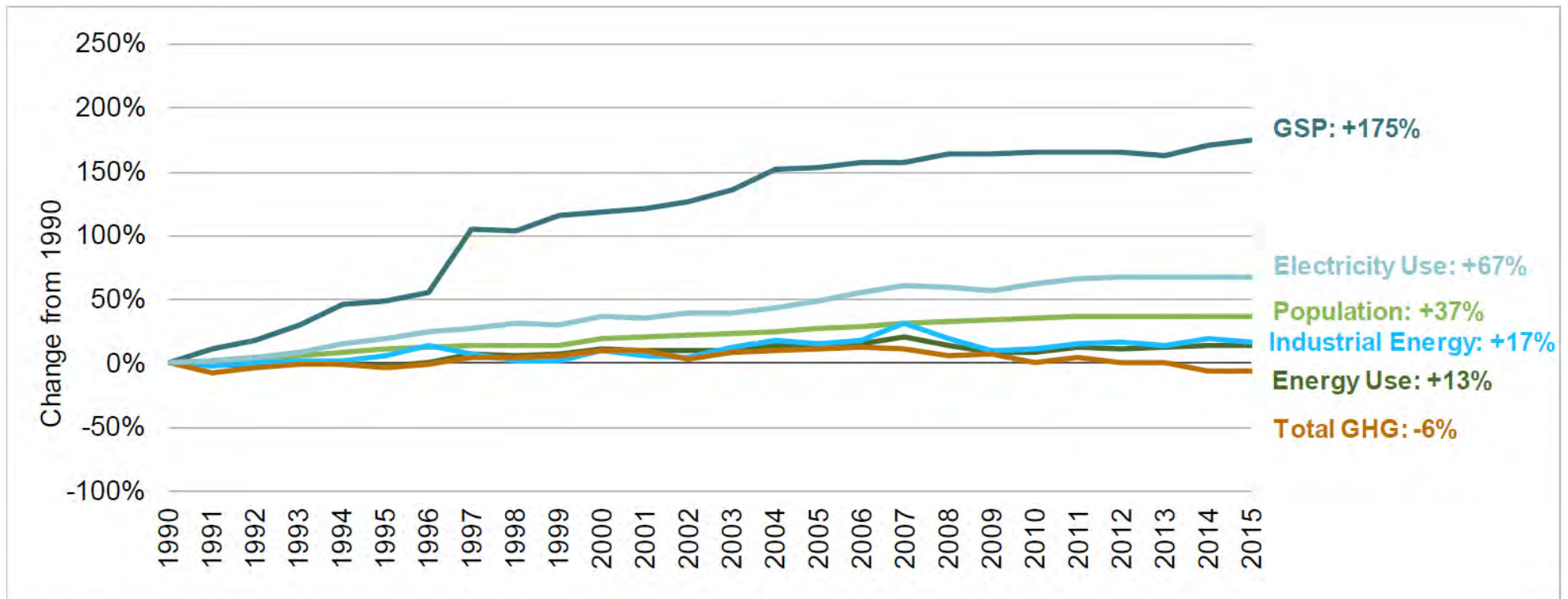
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New York
1990-2015
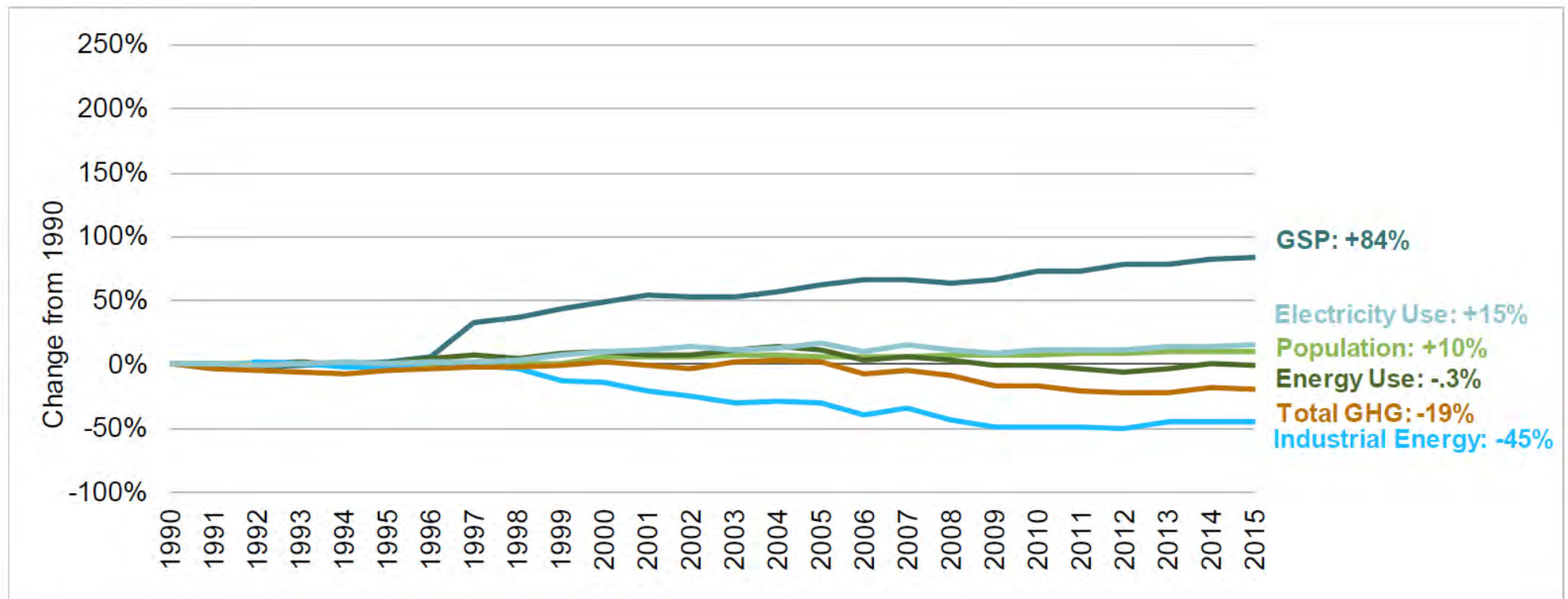
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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North Carolina
1990-2015

GSP: +124%

Population: +51%
Electricity Use: +49%
Energy Use: +23%
Total GHG: +8%
Industrial Energy: -23%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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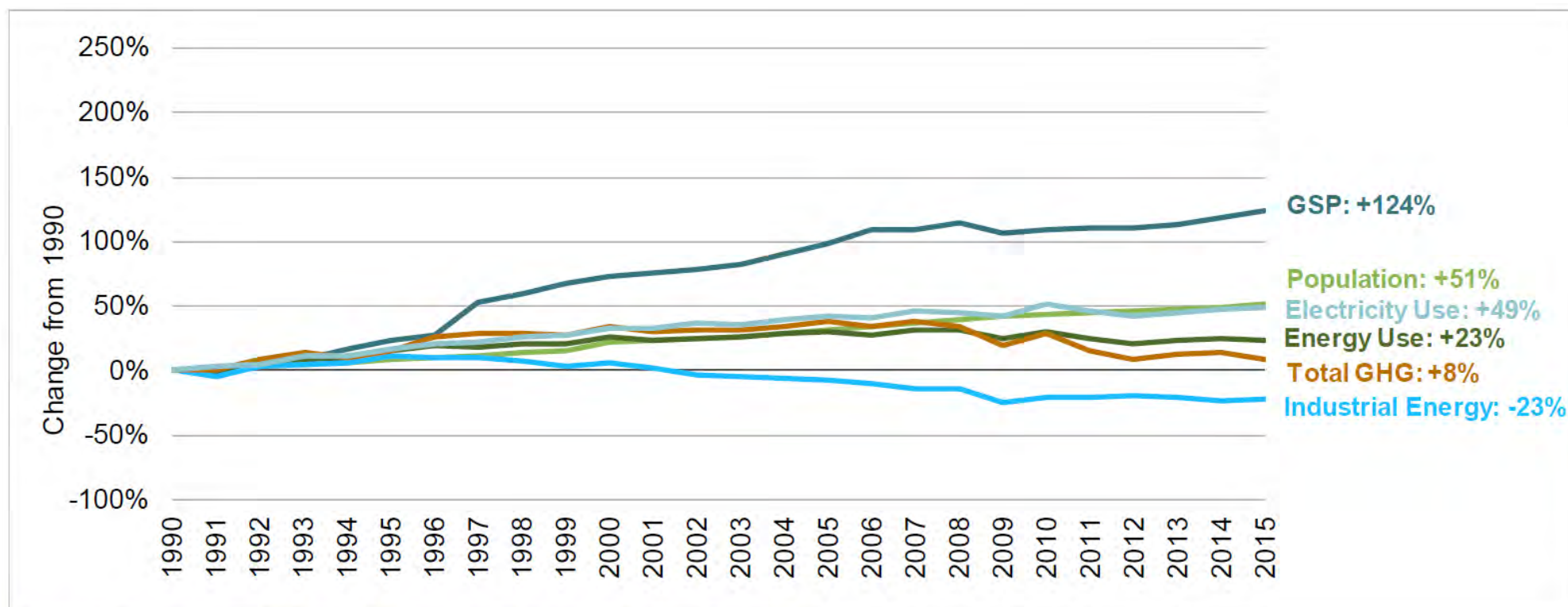
North Dakota
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Ohio
1990-2015

GSP: +72%
Population: +7%
Electricity Use: +5%
Energy Use: -1%
Total GHG: -13%
Industrial Energy: -24%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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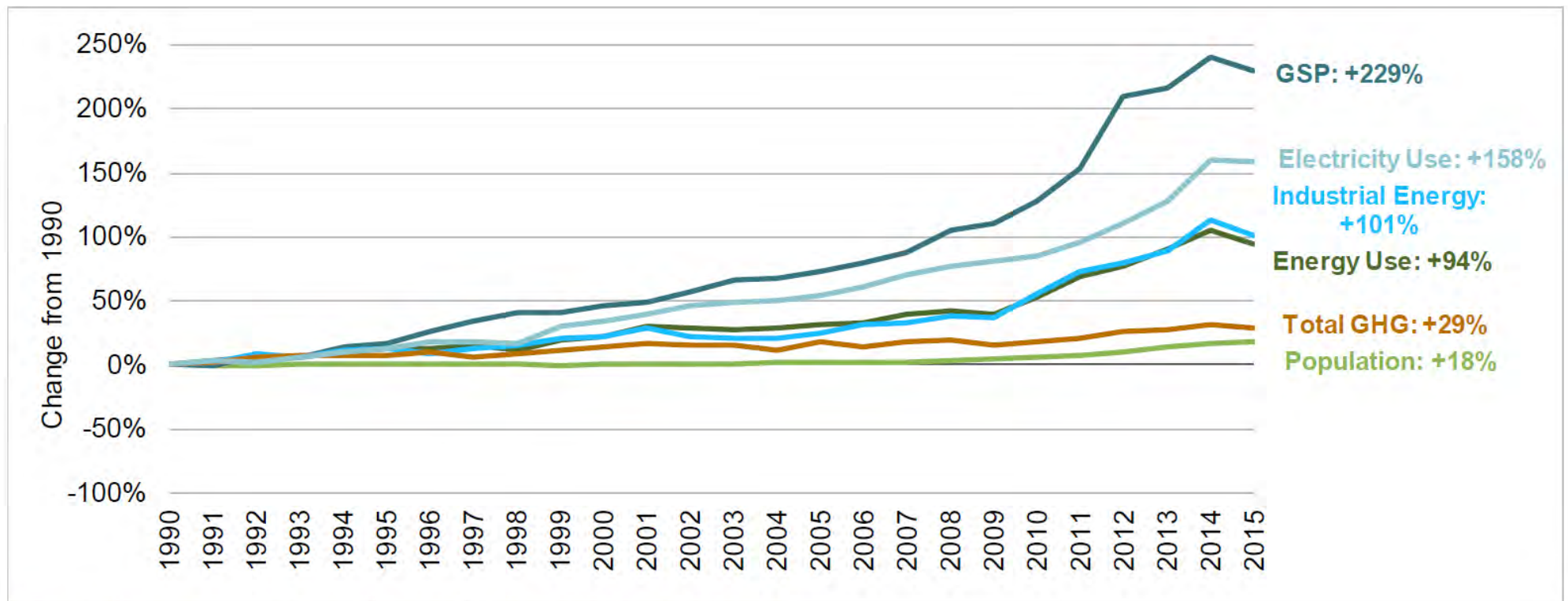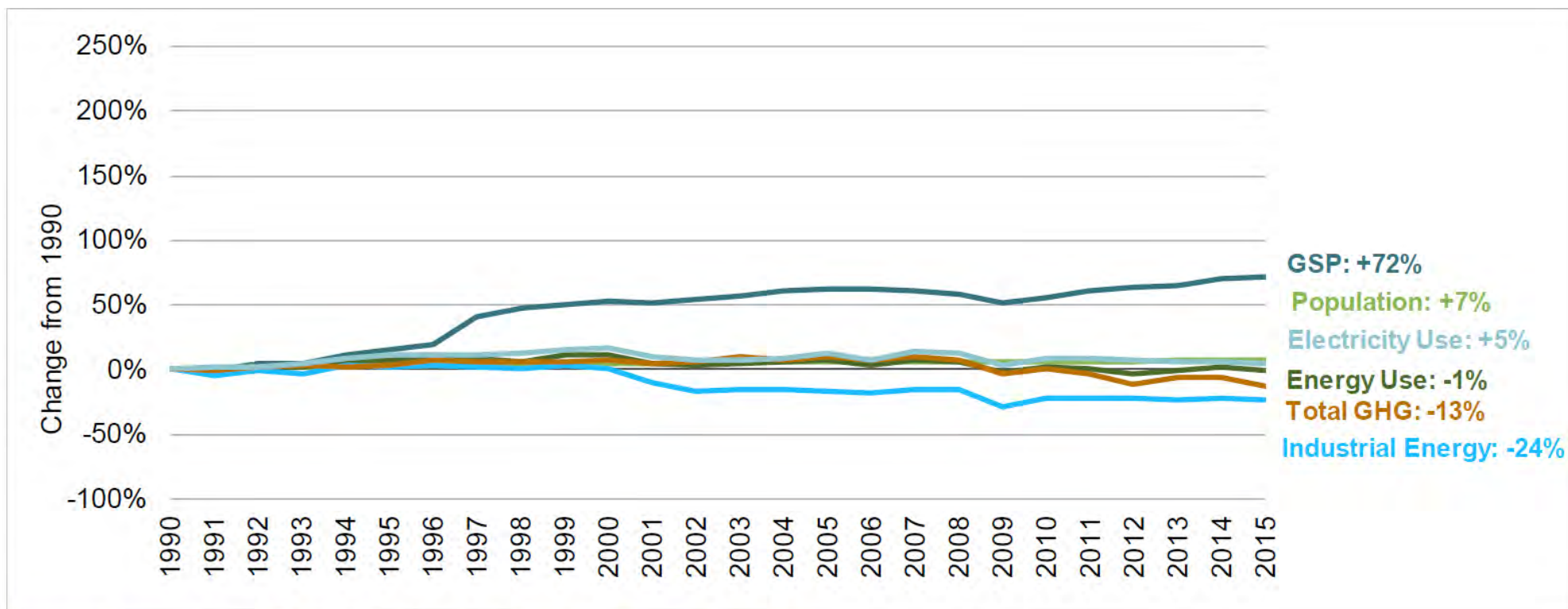
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Oklahoma
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Oregon
1990-2015

GSP: +203%

Population: +41%
Total GHG: +23%
Electricity Use: +10%
Energy Use: -2%
Industrial Energy: -22%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Pennsylvania
1990-2015

GSP: +83%
Electricity Use: +28%
Population: +8%
Energy Use: +7%
Industrial Energy: -1%
Total GHG: -12%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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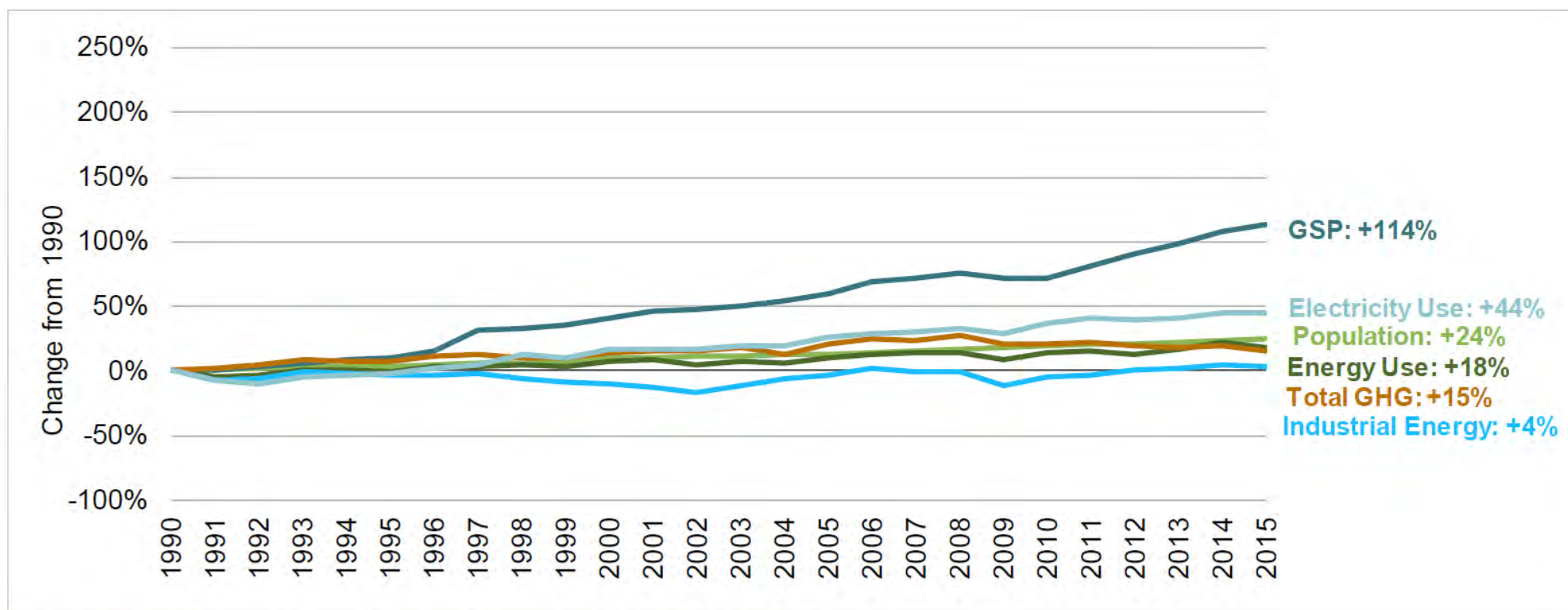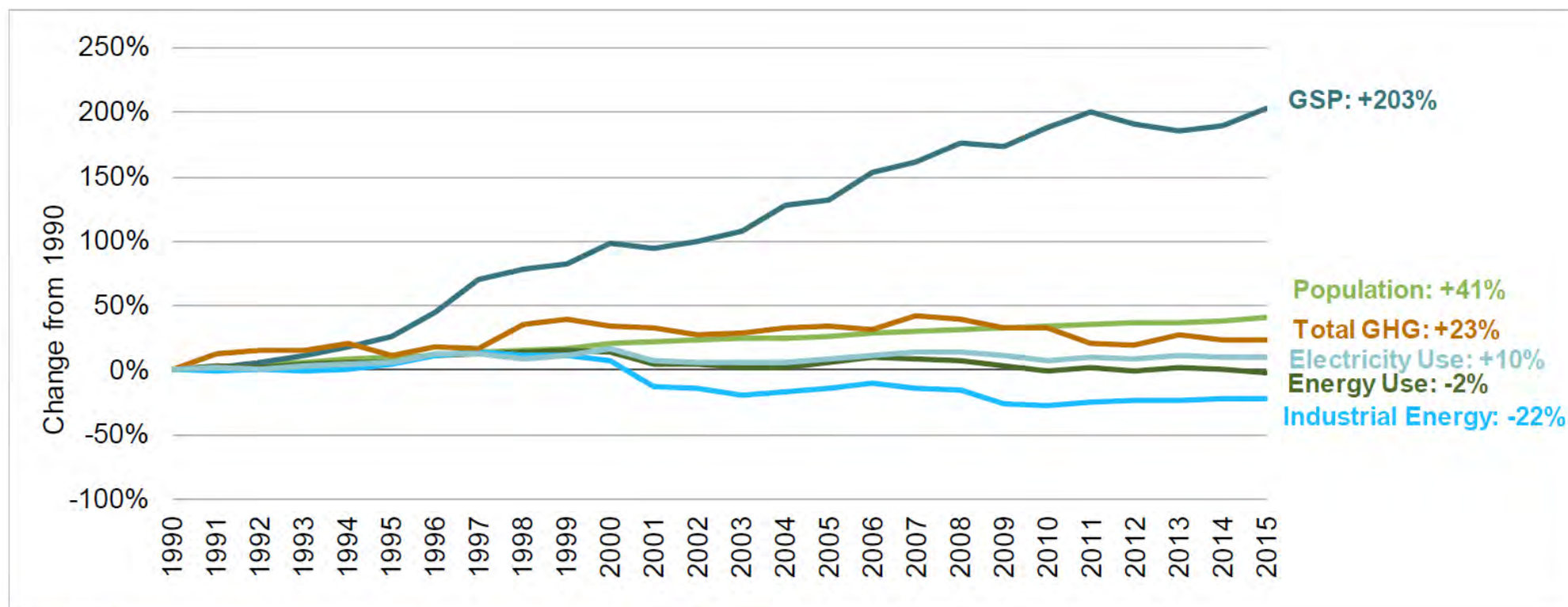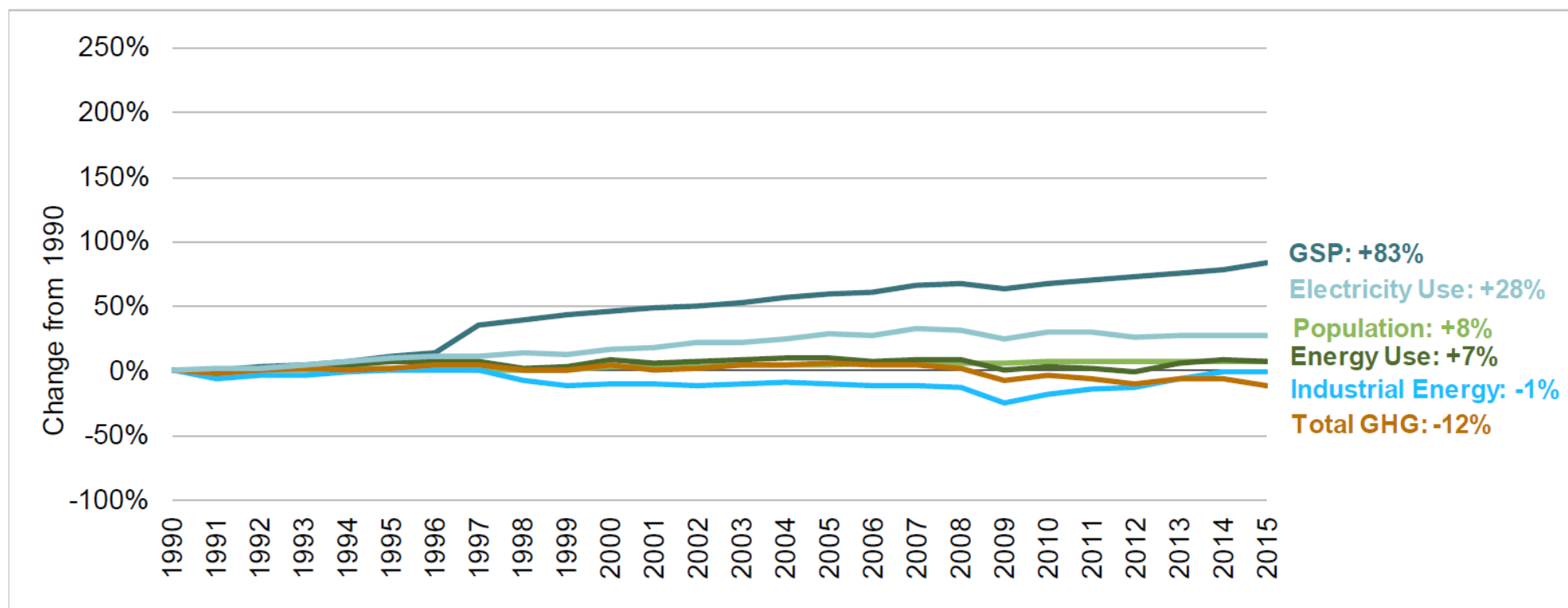
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Rhode Island
1990-2015
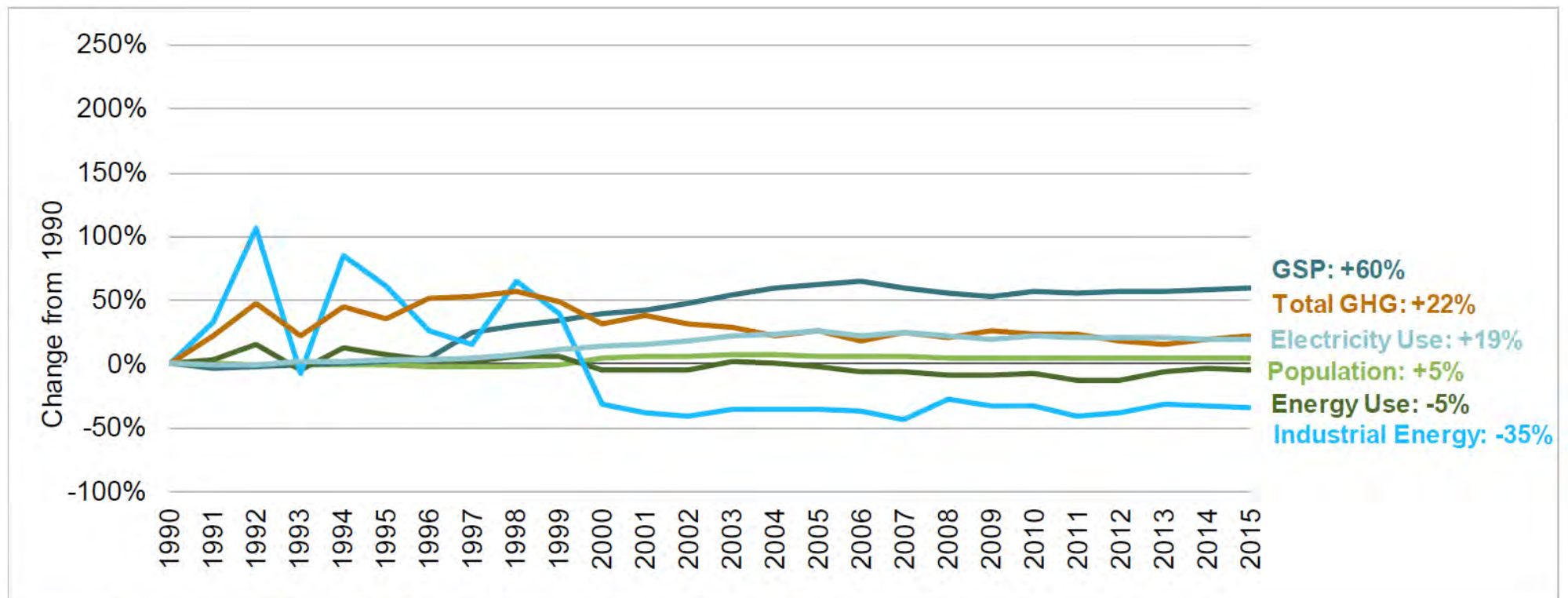
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South Carolina
1990-2015

GSP: +96%
Electricity Use: +46%
Population: +40%
Energy Use: +31%
Total GHG: +20%
Industrial Energy: +.2%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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South Dakota
1990-2015

Industrial Energy: +164%
GSP: +146%
Electricity Use: +91%
Energy Use: +76%
Population: +23%
Total GHG: +18%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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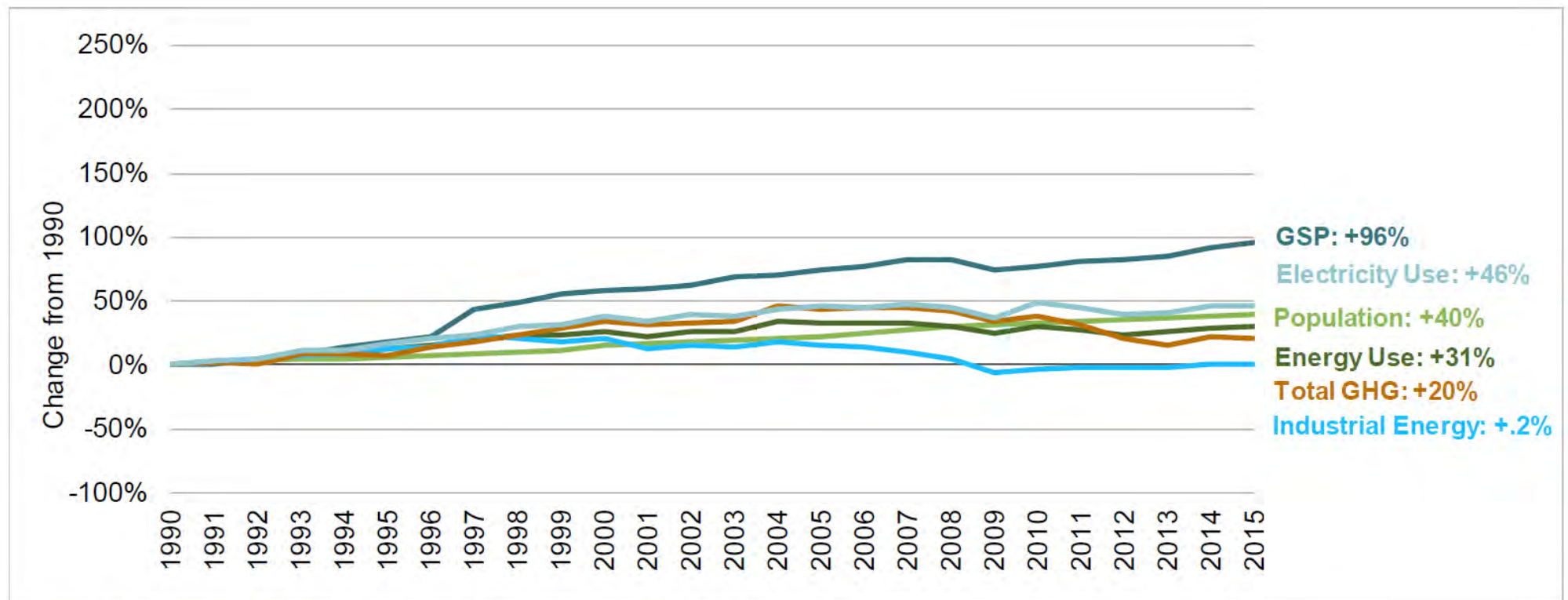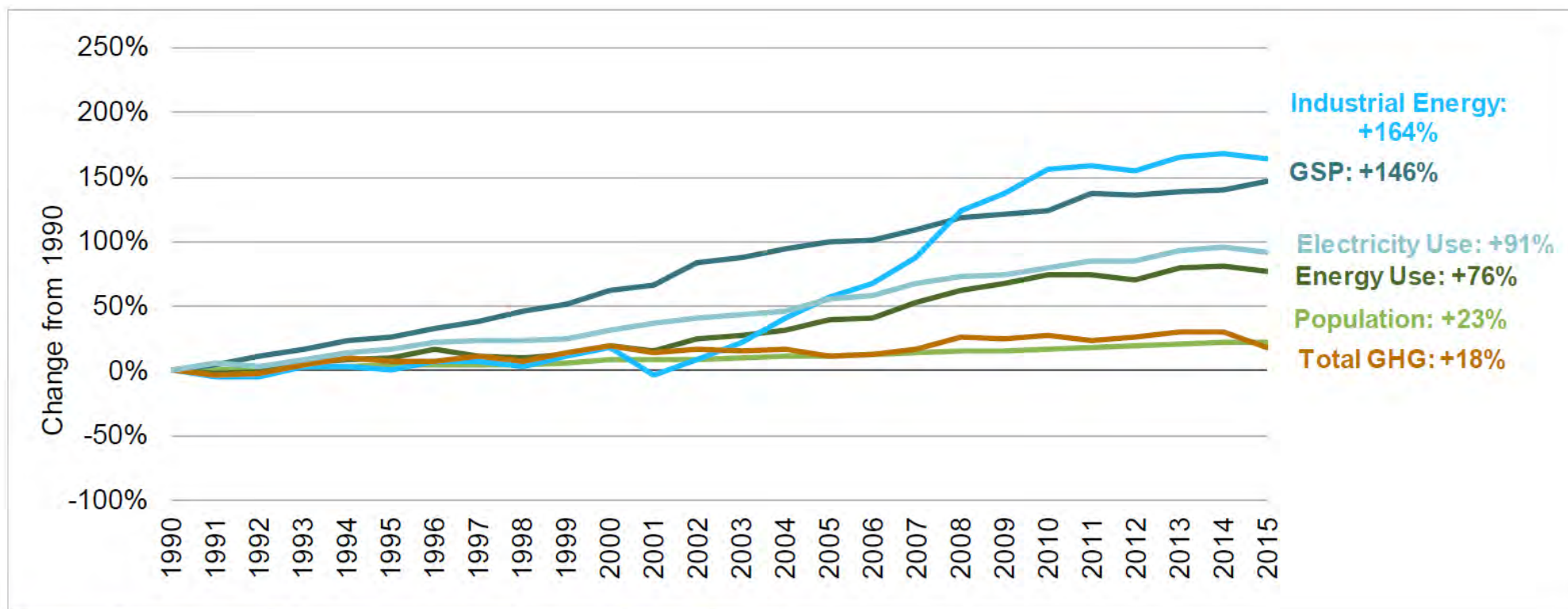
Energy, Economic and Environmental Indicators

Tennessee
1990-2015
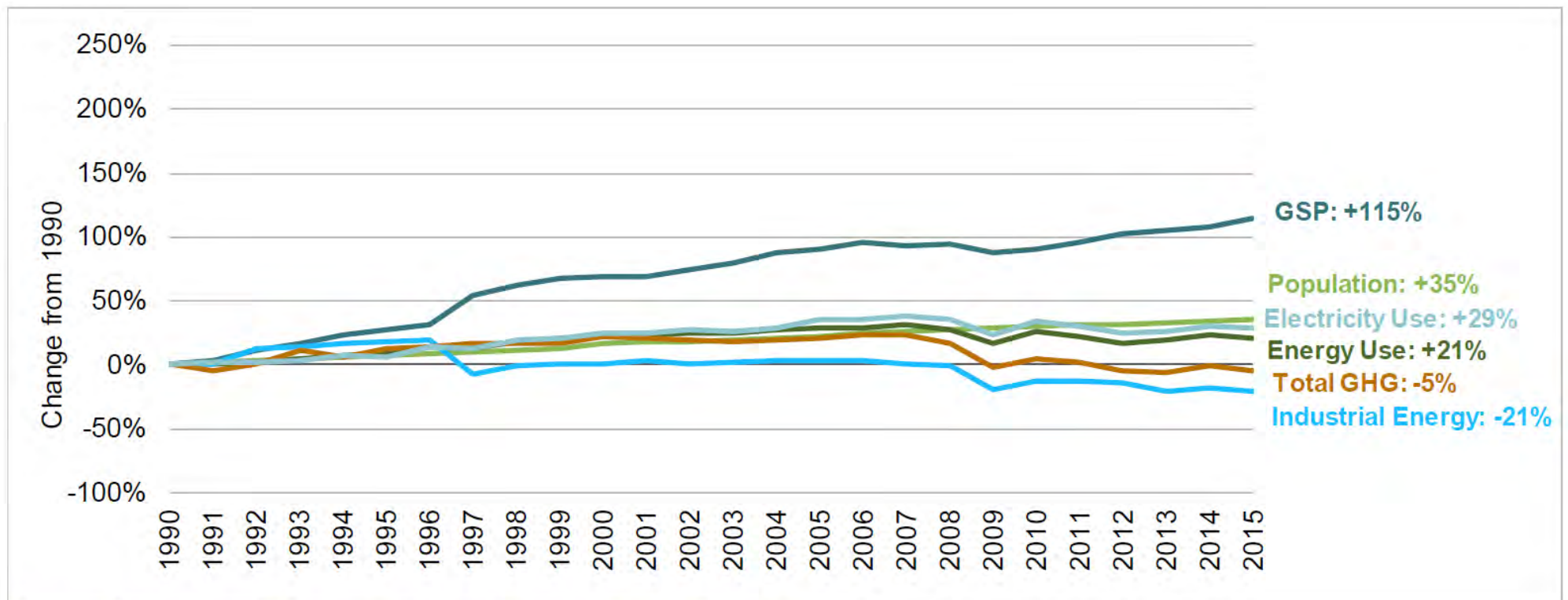
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Texas
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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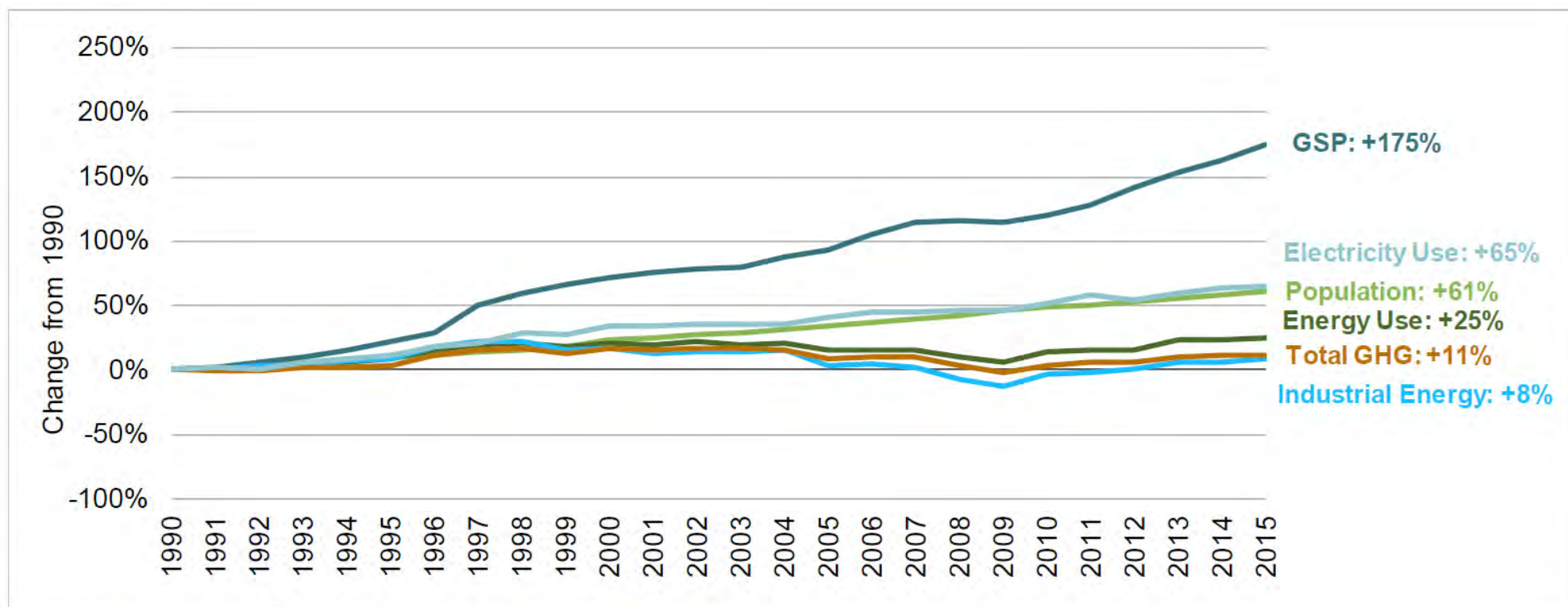
Energy, Economic and Environmental Indicators

Utah
1990-2015
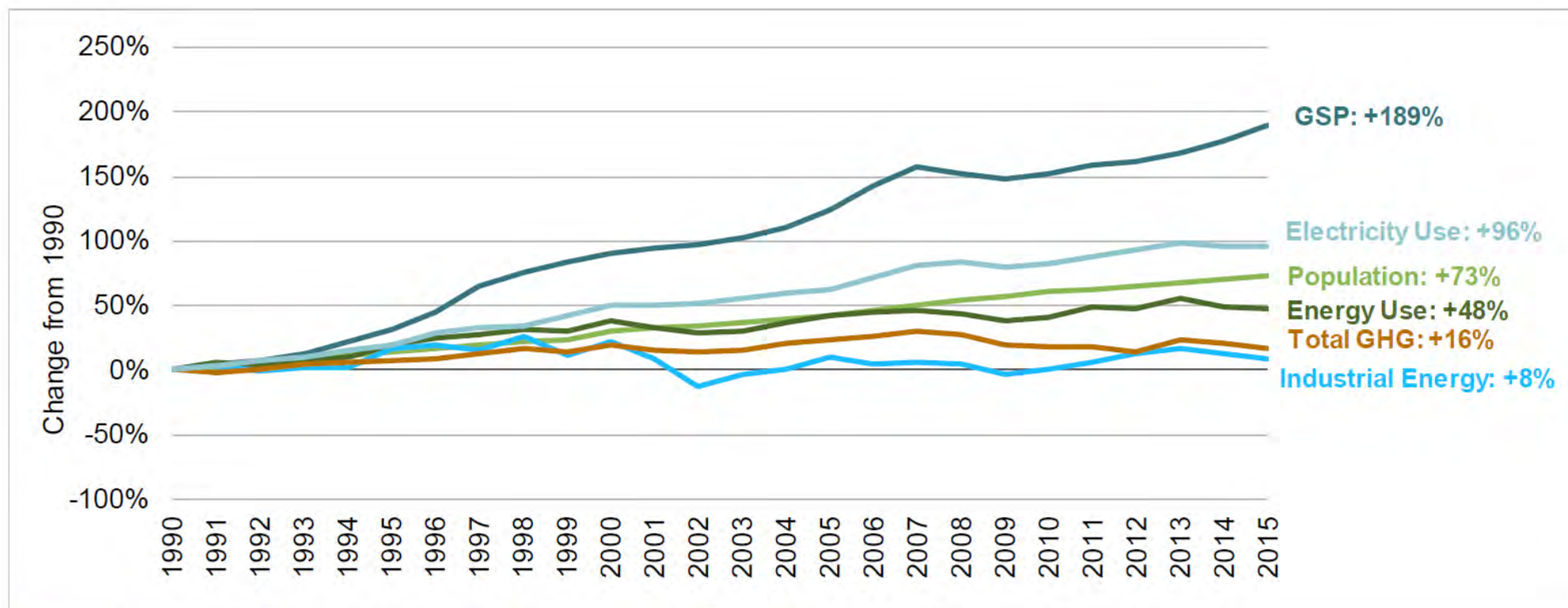
Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Vermont
1990-2015

GSP: +83%

Electricity Use: +17%
Population: +11%
Total GHG: +11%
Energy Use: +5%
Industrial Energy: -21%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Virginia
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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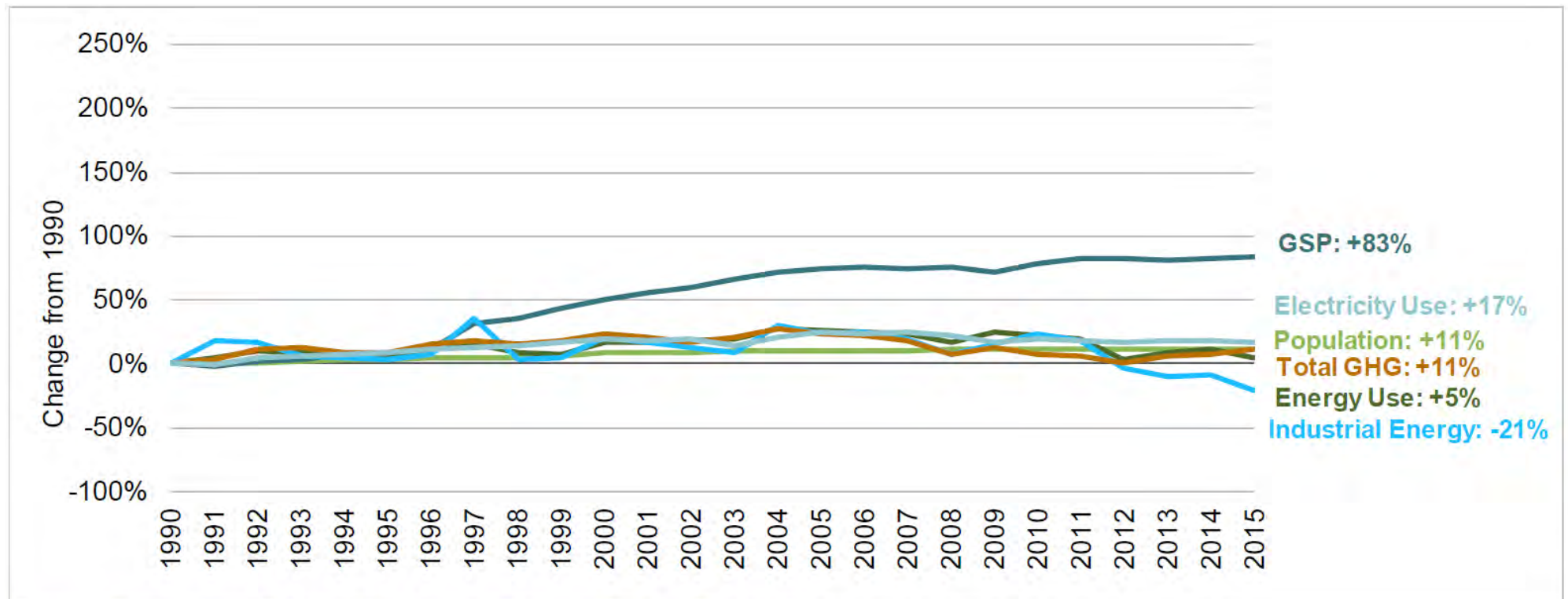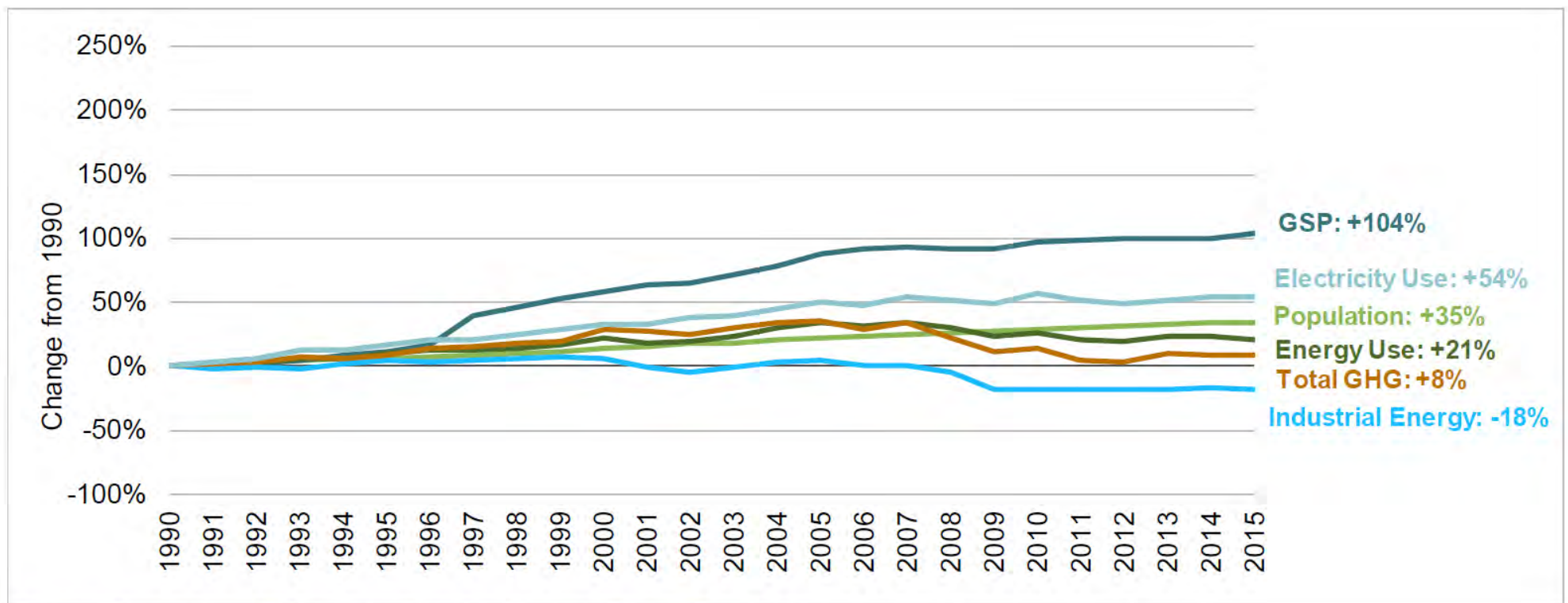
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Washington
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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West Virginia
1990-2015

GSP: +74%
Electricity Use: +40%
Energy Use: +10%
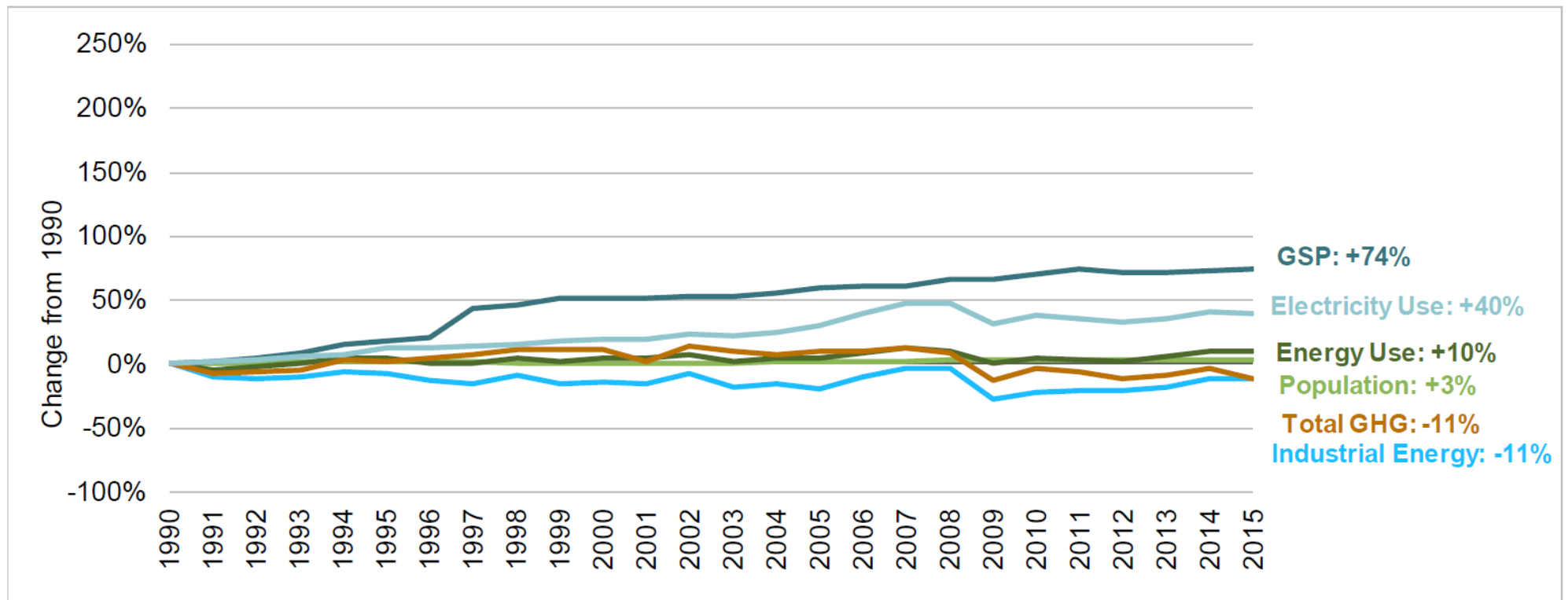Population: +3%
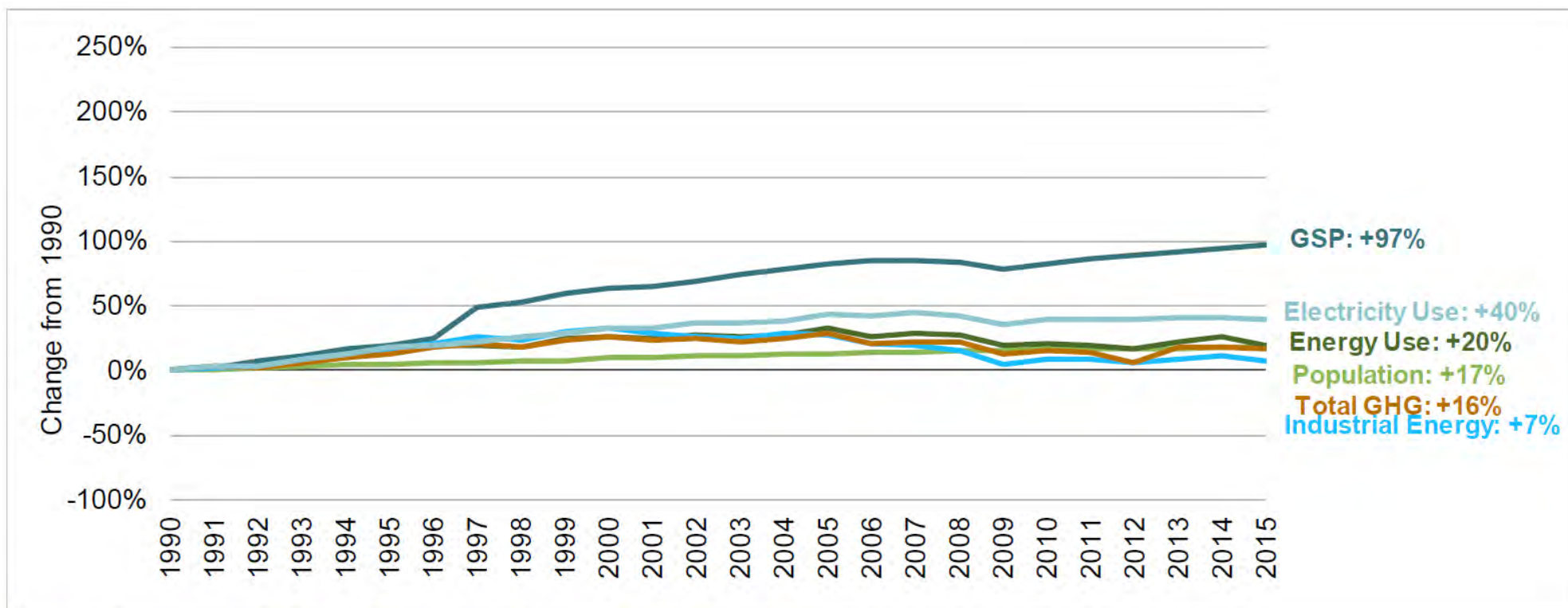Total GHG: -11%
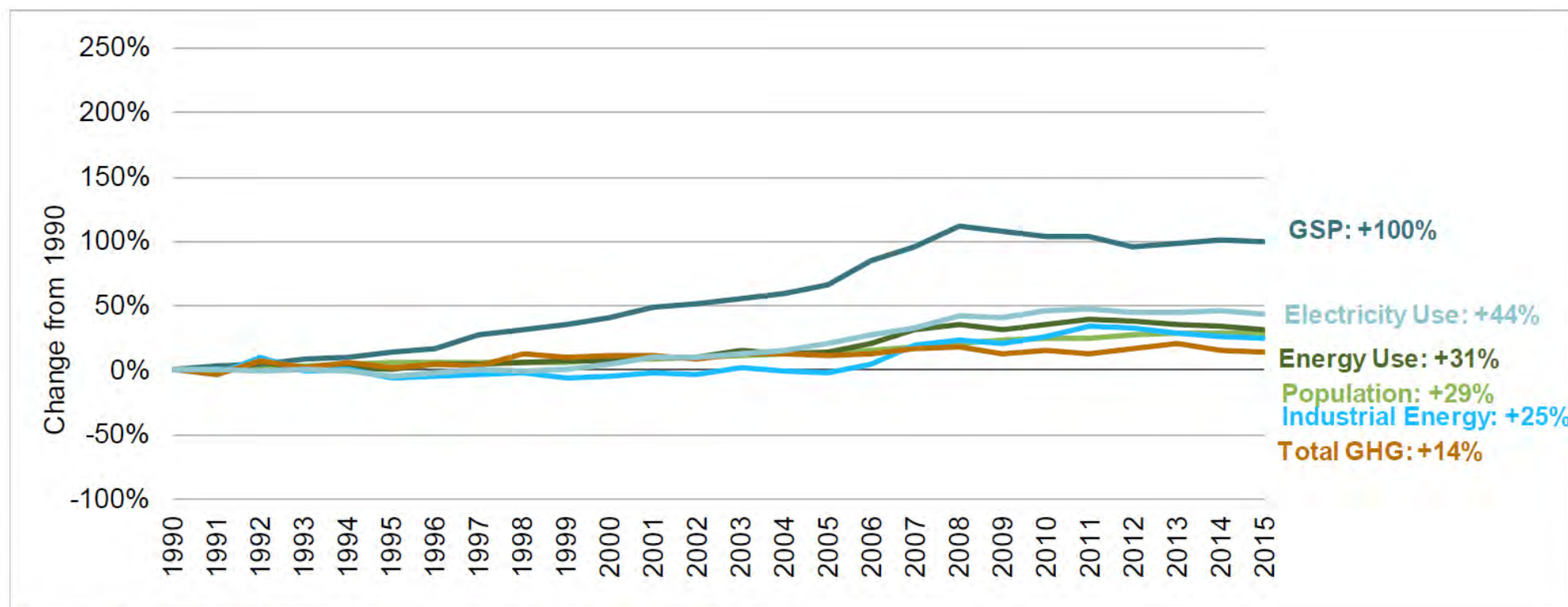Industrial Energy: -11%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Wisconsin
1990-2015

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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Wyoming
1990-2015

GSP: +100%
Electricity Use: +44%
Energy Use: +31%
Population: +29%
Industrial Energy: +25%
Total GHG: +14%

Source: Census.gov, EIA.gov. Analysis by Synapse Energy Economics

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