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April 4, 2023

**ELECTRONIC FILING**

Mr. Adam J. Teitzman, Commission Clerk  
Office of Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

Re: Docket 20230023-GU, Petition for Rate Increase by Peoples Gas System, Inc.

Dear Mr. Teitzman:

Attached for filing on behalf of Peoples Gas System, Inc. in the above-referenced docket is the Direct Testimony of Dr. Richard K. Harper, PhD. and Exhibit No. RKH-1.

Thank you for your assistance in connection with this matter.

(Document 8 of 18)

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. Jeffry Wahlen', with a long horizontal flourish extending to the right.

J. Jeffry Wahlen

cc: Charles J. Rehwinkel, Public Counsel  
Jon Moyle, FIPUG  
Major Thompson, OGC  
Ryan Sandy, OGC

JJW/ne  
Attachment

BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20230023-GU

IN RE: PETITION FOR RATE INCREASE  
BY PEOPLES GAS SYSTEM, INC.

PREPARED DIRECT TESTIMONY AND EXHIBIT  
OF  
DR. RICHARD K. HARPER  
ON BEHALF OF  
PEOPLES GAS SYSTEM, INC.

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OF  
DR. RICHARD K. HARPER

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1                                   **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**  
2                                   **PREPARED DIRECT TESTIMONY**  
3                                   **OF**  
4                                   **DR. RICHARD K. HARPER**  
5                                   **ON BEHALF OF PEOPLES GAS SYSTEM, INC.**  
6

7 **EDUCATIONAL BACKGROUND AND EXPERIENCE**

8 **Q.** Please state your name, address, occupation and employer.

9  
10 **A.** My name is Dr. Richard K. Harper, PhD. My business address  
11 is 516 E. Zaragoza St., Pensacola, FL 32502. I am self-  
12 employed.

13  
14 **Q.** Please describe your duties and responsibilities in that  
15 position.

16  
17 **A.** I conduct a variety of studies for public and private clients  
18 using the tools of economic analysis.

19  
20 **Q.** Please provide a brief outline of your educational background  
21 and business experience.

22  
23 **A.** My current curriculum vitae is included as Document No. 1 of  
24 my exhibit. I received a BA in Economics from Guilford College  
25 in 1978, and an MA in 1986 and a PhD in 1989, both in Economics

1 from Duke University. I worked as a professional economist  
2 from 1980 - 1984 at Research Triangle Institute in Research  
3 Triangle Park, North Carolina, and at the University of West  
4 Florida ("UWF") from 1989 until retiring in 2017.

5  
6 From 1996 - 2011 (except during a sabbatical and other time  
7 away) I served as the Director of UWF's Haas Center for  
8 Business Research and Economic Development, conducting  
9 numerous studies of the local, regional, and state economies  
10 and economic sectors. I then served as Executive Director of  
11 the UWF Office of Economic Development and Engagement,  
12 overseeing activities of the Haas Center and of the State  
13 Director's Office of the Florida Small Business Development  
14 Center Network. I served as the Senior Policy Advisor for  
15 Economic Affairs for the Florida Senate from 2012 until 2014.  
16 I then returned to UWF as Assistant, then Associate, Vice  
17 President for Research and Economic Development and served as  
18 the University's Chief Research Officer during 2015 and 2016.

19  
20 I have offered expert economics testimony in litigation and  
21 served as the economic expert for the State of Florida from  
22 inception until completion in its economic damages litigation  
23 with BP. Since retiring from UWF in 2017, I have worked as a  
24 consultant in economics, performing a variety of studies of  
25 economic issues for public and private clients. I currently

1           serve as the Economic Advisor to Triumph Gulf Coast, Inc.  
2           ("Triumph"), providing advice and support to the Triumph  
3           Board of Directors as it seeks to distribute \$1.5 billion in  
4           Deepwater Horizon damages funds to projects that will grow  
5           and diversify the Northwest Florida economy.

6  
7   **Q.**    Have you provided testimony before the Florida Public Service  
8           Commission?

9  
10   **A.**    Yes. I have provided testimony supporting growth trends in  
11           Florida and the benefit of natural gas use in Florida from an  
12           economic perspective for Peoples Gas System, Inc., in the  
13           company's 2020 base rate proceeding in Docket No. 20200051-  
14           GU.

15  
16   **PURPOSE OF DIRECT TESTIMONY**

17   **Q.**    What are the purposes of your prepared direct testimony in  
18           this proceeding?

19  
20   **A.**    My prepared direct testimony will comment on past and future  
21           growth trends in Florida, with emphasis on future strong  
22           growth in population and economic activity that will drive  
23           growth in natural gas demand as described in the prepared  
24           direct testimonies of Peoples Gas System, Inc.'s ("Peoples"  
25           or the "company") witnesses Eric Fox and Timothy O'Connor. I

1 will describe the recent trends in inflation and the impact  
2 on the company's customers and cost of service. I have also  
3 been asked to comment on the benefit of natural gas use to  
4 the State of Florida and its citizens from an economic  
5 perspective. These benefits include the value for  
6 residential, commercial and industrial customers through  
7 economical energy prices that allow and promote additional  
8 job creation. They also include environmental benefits  
9 relative to traditional energy sources, such as coal and oil.

10  
11 **Q.** Did you prepare any exhibits in support of your prepared  
12 direct testimony?

13  
14 **A.** Yes. Exhibit No. RKH-1 was prepared under my direction and  
15 supervision. My exhibit consists of 20 documents, as follows:

16  
17 Document No. 1 Curriculum Vitae of Dr. Richard K. Harper  
18 Document No. 2 Endnotes for the Prepared Direct  
19 Testimony of Dr. Richard K. Harper  
20 Document No. 3 Population Growth in Florida by Decade,  
21 1970-2059  
22 Document No. 4 Total Nonfarm Payrolls in Florida and the  
23 Nation  
24 Document No. 5 Annual GDP Growth Rate, Florida and the  
25 Nation, 1988-2021

1	Document No. 6	All Transactions House Price Index,
2		Florida and the U.S.
3	Document No. 7	Producer Price Index, Residential
4		Construction Inputs
5	Document No. 8	Measures of Inflation
6	Document No. 9	Cumulative Increase in Household Costs
7		for PGS Customers
8	Document No. 10	Cumulative Increase in Business Costs for
9		PGS Customers
10	Document No. 11	Cumulative Increase in Relevant PGS
11		Business Costs
12	Document No. 12	Typology for Homebuyer Net Migration
13		Based on Metro Population Size
14	Document No. 13	Total Population Indexed to 2020-
15		Charlotte, FL
16	Document No. 14	Total Population Indexed to 2020-
17		Collier, FL
18	Document No. 15	Total Population Indexed to 2020- Duval,
19		FL
20	Document No. 16	Total Population Indexed to 2020- Bay, FL
21	Document No. 17	Total Population Indexed to 2020-
22		Broward, FL
23	Document No. 18	Total Population Indexed to 2020- Miami-
24		Dade, FL
25	Document No. 19	Total Population Indexed to 2020- Lee, FL



**FLORIDA'S POPULATION GROWTH AND ECONOMIC GROWTH OVER TIME**

**Q.** What are the Florida growth trends that are relevant to natural gas service expansion and reliability projects?

**A.** Florida has historically seen population and economic growth rates much greater than those for the nation overall. Demographers note that Florida's population growth rates have ranked among the top eight states in each of the ten decades since 1920, and in most decades ranked in the top four.<sup>i</sup> In 1920, New York had a population of 10.38 million, while Florida had 0.97 million. Over the next ten decades, New York grew by 95 percent to reach a population of 20.2 million, while Florida grew by 2,124 percent over the same period to reach a population of 21.54 million in 2020.<sup>ii</sup>

Florida's current population (in 2023) is approximately 22.3 million and is expected to swell to 24.14 million permanent residents by 2030, an increase over this period of 1.84 million people.<sup>iii</sup> The migration of people from places both domestic and international into Florida has had profound effects on the state's population and on Florida's economy.

1 Today, as a result of the 2020 Census, Florida has 28  
2 representatives in the 118<sup>th</sup> Congress, while New York has 26,  
3 a share that is proportional to their current populations.<sup>iv</sup>  
4 Population forecasts suggest that Florida will continue to  
5 gain seats over time, and that New York will continue to lose  
6 them. This is the continuation of the long-term trend as  
7 Americans migrate from the Northeast and Midwest to the South.  
8 As late as 1953, the Florida delegation to the 435-person  
9 U.S. House of Representatives was 6 representatives, while  
10 the state of New York sent 45.<sup>v</sup>

11  
12 The U.S. Census released information in December 2022 showing  
13 that Florida was the fastest growing state in the nation, at  
14 1.9 percent per year from July 2021 through July 2022. Net  
15 migration of 444,484, or 1,218 more people per day moving  
16 into Florida above and beyond those moving out of Florida,  
17 was the largest among the 50 states.<sup>vi</sup>

18  
19 Forecasts for the coming years suggest that the U.S. will  
20 have grown by a total of 18.8 percent between 2020 and 2050.  
21 During that same period, Florida is expected to grow by 37.4  
22 percent, almost double the country's overall percentage  
23 increase, or by a total of almost 8.1 million new residents.<sup>vii</sup>  
24 If Florida were instead to grow over that period at the  
25 projected nationwide growth rate, the 8.1 million expected

1 new residents would be reduced by 4.01 million. These large  
2 projected population changes will increase the number of  
3 households seeking natural gas service. Meeting the needs of  
4 these new households via natural gas affords additional  
5 benefits per Florida household.<sup>viii</sup>  
6

7 **Q.** Haven't Florida population growth rates been declining in  
8 recent decades?  
9

10 **A.** Yes. Population growth for Florida over the four past decades  
11 and expected growth over the coming four decades can be seen  
12 in Document No. 3 of my exhibit. While growth in the most  
13 recent decade, at 2.7 million people, is not as large as the  
14 3.2-million-person growth attained over the 1980 - 1990  
15 period, it exceeds the growth of all states except Texas.  
16 Further, strong growth in the number of domestic and  
17 international tourists to the state has created additional  
18 demand for lodging, restaurants, retail establishments, and  
19 other tourism amenities that can be met efficiently via  
20 natural gas.  
21

22 **Q.** Does economic activity growth at local, state and national  
23 levels mirror the respective population growth trends?  
24

25 **A.** Economic growth trends closely resemble those of the

1 population growth trends. The Florida economy in recent  
2 decades continues to grow at a substantially faster rate than  
3 the national economy. This is true even when considering the  
4 larger than national average impact to Florida of the Great  
5 Recession of 2007 to 2009. Using January 2000 employment as  
6 a base, the cumulative growth in nonfarm employment in Florida  
7 as of November 2022, at 37.7 percent, is more than twice as  
8 large as employment growth in the nation as a whole over the  
9 last twenty years. This is shown in Document No. 4 of my  
10 exhibit.

11  
12 Florida's faster growth is also reflected in higher growth  
13 than for the nation in gross domestic product ("GDP"). GDP is  
14 the most commonly reported measure of economic activity and  
15 represents the dollar value of production of goods and  
16 services during any particular quarter or year. It is reported  
17 quarterly by the U.S. Bureau of Economic Analysis for the  
18 nation and for individual states.

19  
20 Over the most recent decade Florida's GDP grew by a cumulative  
21 75.3 percent, while that of the nation as a whole grew by  
22 54.7 percent. This can be seen in Document No. 5 of my  
23 exhibit. But for the effects of the Great Recession of 2007  
24 - 2009, that growth differential would likely have been even  
25 greater. Florida suffered particularly during this housing-

1 driven recession because Florida's construction sector is  
2 about 25 percent larger than the national average. This is  
3 due to the need to accommodate both the high rates of inbound  
4 migration of people from other states and other countries as  
5 well as to accommodate the strong demand for vacation housing.

6  
7 **Q.** Is the damage inflicted on growth and the housing market by  
8 the Great Recession now over?

9  
10 **A.** Yes. Housing prices have substantially recovered in Florida  
11 and returned to the long-run housing price trends, and now  
12 exceed the peak reached during the "housing bubble" before  
13 the Great Recession. Setting the January 2000 price of a home  
14 at \$100,000, the average price nationally had risen to  
15 \$270,900, while it had risen to \$382,400 in Florida. This can  
16 be seen in Document No. 6 of my exhibit.

17  
18 Current supply side constraints in housing, including limited  
19 availability of housing inventory as well as increased  
20 building input prices, such as lumber and labor, have been  
21 primary drivers of price increase seen in the 2021 - 2022  
22 price run-up. A chart of this cost inflation in housing is  
23 presented in Document No. 7 of my exhibit. As can be seen, in  
24 February 2023, the price index for residential construction  
25 inputs had only begun to decline from its highs of mid-2022

1 and is still 49 percent higher than in January 2015.

2  
3 **RECENT TRENDS IN INFLATION**

4 **Q.** Please describe recent trends in inflation and how they will  
5 likely change over time.

6  
7 **A.** Inflation is defined to be the change in prices of goods and  
8 services in the economy. The most commonly reported measure  
9 of inflation is the Consumer Price Index for All Urban  
10 Consumers: All Items, generally referred to as the ("CPI").  
11 The CPI is reported every month by the U.S. Bureau of Labor  
12 Statistics. It is a price index of a basket of goods and  
13 services paid by urban consumers representing roughly 88  
14 percent of the total population. Prices are collected monthly  
15 from about 4,000 housing units and 26,000 retail  
16 establishments across 87 urban areas.<sup>ix</sup> The path of CPI  
17 inflation over the past decade shows a peak in mid-2022 at  
18 almost nine percent before beginning to fall throughout the  
19 second half of the year, as is shown in Document No. 8 of my  
20 exhibit.

21  
22 Among the measures of inflation, one that is often referred  
23 to in policy discussions by the Federal Reserve (the "Fed")  
24 is the Personal Consumption Expenditure Price Index (the "PCE  
25 Index"). The PCE Index captures inflation or deflation across

1 a wide range of consumer expenses while also reflecting  
2 changes in consumer behavior. For example, if the price of  
3 beef rises, consumers may buy less beef and more chicken.  
4 Such behavioral changes are not captured in the CPI, which  
5 assumes a constant weight for each of the many items in the  
6 index.\* The recent path of the CPE Index is also shown in  
7 Document No. 8 of my exhibit.

8  
9 For both the CPI and the PCE Indexes, versions which exclude  
10 food and energy prices are published, and are referred to as  
11 "core inflation." This "core" distinction is important  
12 because it is thought that the Fed's interest rate policy-  
13 setting tools will have little effect on food prices and on  
14 energy prices. Food prices may be heavily influenced by  
15 weather conditions and other factors (e.g., avian flu may  
16 influence the price of eggs) that are outside the control of  
17 the Fed, while energy prices may be heavily influenced by  
18 global geopolitical conditions and other factors (e.g., the  
19 Russian invasion of Ukraine) that are also outside the control  
20 of the Fed. The core PCE is also shown in Document No. 8 of  
21 my exhibit.

22  
23 The mandate of the Fed is to ensure price stability and full  
24 employment. The Fed's price stability target is an inflation  
25 rate at about two percent.<sup>xi</sup> As can be seen in Document No. 8

1 of my exhibit, inflation rates over the past decade have  
2 fluctuated slightly above or below two percent until Quarter  
3 two of 2021, at which time inflation accelerated to a rate  
4 not seen in the U.S. since the 1970s and 1980s.

5  
6 Current market expectations are for economic growth rates  
7 across the nation to slow, perhaps leading to recession in  
8 late 2023 or in 2024. Timing estimates derived from bond  
9 markets and Fed estimates suggest that a return to the two  
10 percent rate of inflation will be attained, but is unlikely  
11 to be achieved before 2024.

12  
13 **Q.** What has been the rate of inflation to the company's  
14 residential and commercial customers?

15  
16 **A.** The increase in average monthly bills for gas services has  
17 been substantially below overall rates of price increase of  
18 other commonly purchased goods and services used by  
19 households and businesses. This can be seen in the charts  
20 attached in Documents No. 9 and 10 of my exhibit.

21  
22 **Q.** What is the impact of higher inflation rates on the ability  
23 of utility service providers to deliver their services?

24  
25 The prices of the inputs used in system expansion, operations,



1 and maintenance have increased, and these price increases  
2 cannot be absorbed without provision for the revenue  
3 increases needed to finance them. As can be seen in Document  
4 No. 11 of my exhibit, the price of key inputs of the type  
5 used by the company in supplying services has increased at a  
6 faster rate than has company revenue.

7  
8 **Q.** Will this need for higher revenues to cover costs persist?

9  
10 **A.** Yes, although the rate of inflation is expected to abate and  
11 return to the Fed's target two percent rate, it is almost a  
12 certainty that the prices of key inputs, including both labor  
13 and materials, will not fall back to their previous price  
14 levels. Instead, the new higher price levels would simply  
15 come to reflect a lower rate of price growth (i.e., inflation  
16 will return to its normal two percent rate).

17  
18 **Q.** Will the trend of higher growth in Florida than in the nation  
19 overall continue over the longer term or does it just reflect  
20 the recovery from the Great Recession that hit Florida harder  
21 than the rest of the nation?

22  
23 **A.** Yes, this trend will continue. Population growth rates  
24 reflect ongoing demographic trends, with the peak birth years  
25 from the "Baby Boom" (1946 - 64 birth years) giving way to

1 subsequent lower birth rates. Generation X (1965 - 79) was  
2 followed by the millennials (1980 - 1994) who have become the  
3 largest population group in the nation as the baby-boomer  
4 generation ages. However, Florida still expects 8.1 million  
5 new residents between 2020 and 2050. Slower national growth  
6 rates notwithstanding, since the time of the Great Recession,  
7 Florida population growth has substantially exceeded the  
8 national population growth rate, with Florida growing almost  
9 twice as fast - a cumulative 20.4 percent versus 10.6 percent  
10 for the nation over the 2008 - 2023 period.<sup>xii</sup>

11  
12 **Q.** Why will Florida continue to be a top destination for people  
13 moving from other states?

14  
15 **A.** Florida's high population growth trends appear to likely  
16 continue into the future. Some of the primary drivers of  
17 relocation decisions by those who come from other states into  
18 Florida are longstanding, and include job opportunities,  
19 desire for a warmer climate, year-round outdoor activities,  
20 and an affordable lifestyle.

21  
22 Since the passage and implementation of the 2017 Tax Cuts and  
23 Jobs Act, there is also a change in the relative cost of  
24 living driven by the attractiveness of Florida's tax  
25 structure. Because of Florida's lack of a state income tax,

1 its relatively modest property tax burden, and its modest  
2 level of state expenditures per state resident, Florida's  
3 attraction for inbound migration from other states continues  
4 to be strong. However, the recent several year run-up in house  
5 prices, combined with property insurance challenges  
6 exacerbated by Hurricane Ian, are now posing challenges to  
7 Florida's traditional housing affordability advantage. While  
8 this will serve to moderate Florida's recent inbound  
9 migration surge, Florida population growth will continue to  
10 exceed the national average rate.

11  
12 Even though national population growth rates are falling due  
13 to the demographics of the post-war generations, the  
14 cumulative growth in the number of residents of Florida means  
15 that a somewhat slower rate of growth will still attract close  
16 to the same number of new households as had been seen during  
17 previous decades.

18  
19 **Q.** Will the Coronavirus have any significant negative long-term  
20 effects on the growth trends you have just described?

21  
22 **A.** No. The Coronavirus has negatively affected economic growth  
23 in Florida and throughout the country in a way that we have  
24 never seen before; however, the data now document an  
25 acceleration in the growth differential in favor of Florida.

1 This was driven in the short term by the strong recovery in  
2 leisure and hospitality sector as Florida was open for  
3 business when other states were not. Strong demand for housing  
4 created by record numbers of new residents also contributed  
5 to that growth.

6  
7 **Q.** Have there been other likely effects of the Coronavirus on  
8 natural gas markets in Florida?

9  
10 **A.** Yes, there have been other effects. The pandemic has  
11 intensified an existing trend towards migration away from  
12 cities with the highest population density. People have voted  
13 with their feet, leaving New York and other densely populated  
14 top 25 urban areas and they have come to Florida. This can be  
15 seen in Document No. 12 which presents 2022 migration data  
16 from Freddie Mac, (the Federal Home Loan Mortgage  
17 Corporation, which buys home loans from issuers). Because it  
18 has information on both the origin and destination of families  
19 with new mortgages, it can provide more up to date information  
20 than is available from the U.S. Census Bureau.

21  
22 Further, an effect of the pandemic has been to increase at-  
23 home activities, including working, dining, shopping, and  
24 entertainment, relative to historical patterns. While some of  
25 this is transitory, evidence suggests that these activities

1 are likely here to stay. This would naturally increase  
2 consumer demand for increased amenities in the home.  
3 Additionally, the pandemic exposed fragility in supply chains  
4 of intermediate and final products from toilet paper to milk  
5 to meat, to automobiles and steel. Consumers may wish, for  
6 purposes of risk diversification and redundancy of key home  
7 attributes, to have access to natural gas, whether for  
8 emergency home electricity generators or simply for the  
9 convenience and amenity value of hot water and cooking even  
10 when the electricity is out. In this way, increased  
11 availability of natural gas distribution systems will be a  
12 benefit to purchasers of new and existing homes.

13  
14 **BENEFITS TO FLORIDA OF GROWTH IN UTILIZATION OF NATURAL GAS**

15 **Q.** What are the benefits to further growth in the use of natural  
16 gas in Florida?

17  
18 **A.** The benefits of natural gas relative to other energy sources  
19 are well-understood. Among the most important is the multi-  
20 year and ongoing trend for affordability relative to  
21 alternate fuel sources.<sup>xiii</sup> Another is the decrease in  
22 greenhouse gas emissions relative to other fossil-fuel  
23 resources, and the concomitant decrease in noxious pollutant  
24 emissions.<sup>xiv</sup> These have led to quantifiable decreases in  
25 morbidity and mortality and associated increases in economic

1 output across the nation.<sup>xv</sup>

2  
3 In Florida, the switch to natural gas over time has been more  
4 rapid than in most states and our state has already benefitted  
5 substantially from increased use of natural gas to meet energy  
6 needs in the home, in businesses, and in electricity  
7 generation. Across key industries, from electricity  
8 generation to construction, health care, food service,  
9 transportation, HVAC, and other applications, natural gas has  
10 provided reliable, inexpensive, and environmentally friendly  
11 energy to power Florida's economic growth.

12  
13 According to recent data from the EIA, in Florida, about 86.7  
14 percent of natural gas use (measured by BTU) in the first 10  
15 months of 2022 was in electricity generation, with 7.8 percent  
16 industrial use, 3.9 percent in the commercial sector, about  
17 0.3 percent in transportation, and 1.2 percent in the  
18 residential sector.<sup>xvi</sup> This share of usage in electricity  
19 generation is higher than for any other large state in the  
20 nation.<sup>xvii</sup> It is indicative of Florida's warm climate, its  
21 large share of leisure and hospitality businesses, retail  
22 establishments, and service sector activity, and low share of  
23 industrial activity. It is also indicative of the transition  
24 that Florida has made over time away from traditional fossil  
25 fuels of coal and oil into cleaner burning natural gas.

1 Q. Will the growth of renewable energy resources impact growth  
2 trends for natural gas usage in Florida?

3

4 A. No. While the share of renewables in power generation is  
5 growing, natural gas is economic even as renewables usage  
6 increases, and natural gas will play a significant role in  
7 energy solutions to customers. Renewables have not solved  
8 the problems of morning and evening demand peaks in the daily  
9 load (the "duck curve"), and mandated use of renewables would  
10 drive energy prices to levels likely to be unacceptable to  
11 Florida consumers and voters. Even in the future, the  
12 affordable cost, rapid dispatch, and backup capabilities of  
13 natural gas mean it will be an essential part of any set of  
14 sustainable energy policies.

15

16 **ECONOMIC AND DEMOGRAPHIC FORECASTS FOR PEOPLES' LOCATIONS**

17 Q. Have you prepared specific demographic and economic forecasts  
18 for the geographic locations served by Peoples?

19

20 A. Yes, economic and demographic descriptors for each of the  
21 counties that are served by Peoples can be seen in the county-  
22 specific chart packages in Documents No. 13 through 20 of my  
23 exhibit.

24

25 Q. What are your conclusions in respect to these areas?

1 **A.** Florida Population growth is expected to exceed the national  
2 average rate of growth. This means that there will be an  
3 increase in demand for natural gas. Florida's long-held  
4 advantage over other states in providing an environment where  
5 people want to live will continue. This advantage may be  
6 increasing over time in terms of economics as the tax penalty  
7 to households of staying up North was increased by the 2017  
8 changes to the federal tax code, the pandemic driven changes,  
9 and the changing political environment.

10

11 The projects in which Peoples' has invested and will continue  
12 to invest in are representative of the diversity of the state  
13 insofar as they meet the needs of some of the counties with  
14 fastest residential housing growth, areas with the greatest  
15 planned industrial growth, and areas that will be expected to  
16 accommodate a greater share of Florida's future growth.

17

18 **SUMMARY**

19 **Q.** Please summarize your prepared direct testimony.

20

21 **A.** The system growth presented by Peoples' in this matter is  
22 supported by the increased demand that has occurred and will  
23 continue to occur as it is driven by population growth and  
24 economic activity growth in the State. Use of low-priced  
25 American natural gas to meet the energy needs of these new



1 households and businesses will allow Florida citizens to  
2 enjoy greater purchasing power by spending less of their  
3 incomes on energy. This new spending will ripple far beyond  
4 the energy sector, allowing new employment and income to be  
5 spread broadly across the Florida economy.

6

7 **Q.** Does this conclude your prepared direct testimony?

8

9 **A.** Yes.

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

DOCKET NO. 20230023-GU  
WITNESS: HARPER

EXHIBIT

OF

DR. RICHARD K. HARPER

ON BEHALF OF PEOPLES GAS SYSTEM, INC.

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#### EDUCATION

Ph.D., Economics, Duke University, 1989  
Areas of specialization:  
Industrial Organization, International Trade, and Public Choice.  
M.A., Economics, Duke University, 1986.  
B.A., Economics and Spanish. Guilford College, Greensboro, NC, 1978.  
Facultad de Filosofia y Letras, Universidad de Sevilla, Spain, 1976-77

#### FELLOWSHIPS, AWARDS AND SERVICE

Florida Chamber of Commerce Council of Business Economists 2017 - present  
Director, then Senior Research Fellow, Studer Community Institute, 2014 - 2016  
Florida Chamber of Commerce Econometrics Council, 2009 - 2016  
Florida TaxWatch Council of Economic Advisors, 2008 - present  
Advisor to Florida Senate Select Committee on Florida's Economy, 2008 - 2010  
Florida Governor's Council of Economic Advisors, 2001 - 2006  
Gabor Company, UWF Faculty Member of the Year, 2002  
President, Gulf Coast Economics Club, 2000 - 2002  
Director, Association for University Business and Economic Research (AUBER), 1999 - 2001  
E.W. Hopkins Summer Research Award, 1996  
Florida Teaching Incentive Program Award, 1997, 1994  
UWF MBA Association Outstanding Graduate Program Instructor, 1994-95  
UWF Student Government Association Distinguished Teaching Award, 1994  
UWF Summer Research Award, 1993, 1990  
UWF Outstanding Undergraduate Teaching and Advising Award, 1993  
UWF Task Force on Undergraduate Education, Curriculum Development Award, 1992  
UWF College of Business, Dyson Faculty Excellence Award, 1991  
Carnegie Foundation, for study of economic sanctions, 4/86-11/87  
Center for International Political Economy, Duke University, Summer, 1987.

#### EXPERIENCE

TRIUMPH GULF COAST, INC. Economic Advisor 12/17 - present  
Advise and support the Board of Directors of Triumph Gulf Coast, Inc. as it evaluates funding requests, makes funding decisions, and monitors program performance for the \$1.5 billion dollar fund intended to grow and diversify Florida counties disproportionately affected by the BP oil spill. Position reports to Executive Director.

THE UNIVERSITY OF WEST FLORIDA Associate Professor 8/95 - 12/17  
Dept of Marketing, Supply Chain Logistics, and Economics  
Pensacola, Florida 32514 Assistant Professor 8/89 - 8/95  
Teaching responsibilities include undergraduate and graduate courses in economics and business.

THE UNIVERSITY OF WEST FLORIDA  
Associate Vice President for Research and Economic Opportunity. 7/15 - 12/16  
Advise university administration on economic issues, serve in University President's Cabinet. Direct UWF Office of Economic Development and Engagement. Position reports to University Provost.

THE FLORIDA SENATE Senior Policy Advisor for Economic Affairs  
Suite 409, The Capitol, Tallahassee, FL 7/12 - 5/14  
Advise Florida Senate on all issues related to economic affairs, including bill drafting, program analysis,

development and administration of economic development incentives, and other issues as needed. Oversight of and liaison with associated Senate committee staff directors. Position housed in Senate President's Office and reports to Chief of Staff of Florida Senate.

THE UNIVERSITY OF WEST FLORIDA

Executive Director, Office of Economic Development and Engagement 1/11 – 12/16  
Pensacola, FL 32514-5752

Direct activities of economic development office, including development of community partnerships and programmatic activities related to economic development. Oversee activities of Haas Center and Florida Small Business Development Center Network. Administer economic development funding programs. Position reports to University Provost.

THE UNIVERSITY OF WEST FLORIDA

Haas Center for Business Research and Economic Development Director 8/98 – 3/03, 8/04 – 1/11  
Pensacola, FL 32514-5752 Interim Director 8/97 - 8/98

Direct activities of research center providing socioeconomic and demographic data and research studies. These include economic impact studies, regional economic research reports, labor market studies and economic forecasting, as well as survey research, marketing research and other business-related topics.

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO Visiting Lecturer  
Greensboro, NC 8/1/88 - 8/89

DUKE UNIVERSITY Research/Teaching Assistant  
Durham, NC 8/84 - 8/89

RESEARCH TRIANGLE INSTITUTE Assistant Economist  
Research Triangle Park, NC 10/79 - 8/84

Duties included assisting in all phases of various funded research projects, including data collection and analysis, report writing, proposal preparation and project management. On-site courses in use of microcomputers for public budgeting taught in Spanish to municipal officials from Costa Rica, Panama, Ecuador, Peru.

PUBLICATIONS

Chakraborty, K. & Harper, R. K. (2017). Measuring the Impact of Socio-economic Factors on School Efficiency in Australia. *Atlantic Economic Journal*, 45 (2), 163-179, doi: DOI 10.1007/s11293-017-9542-x.  
Chakraborty, K. & Harper, R. K. (2017). Dynamic Productivity Analysis and the Effect of Firm-Specific and Macroeconomic Characteristics on Productivity: An Application to the Insurance Industry. *International Journal of Applied Economics*, 14 (2), 37-55.  
Rick Harper. "The Impact of Florida's Minimum Wage Law on Employment in the Hospitality Industry." The James Madison Institute, February, 2012.  
Adler, Kenneth, Rick Harper, and Bob Hoyt. "Bridging the Gap," *Medical Economics*, December 17, 2010. [Electronic health exchanges could eliminate the silos of information and improve care]  
Richard K. Harper and Richard Hawkins. "Hurricanes and the Local Sales Tax Base: Evidence from the 2004 Florida Hurricanes," *State Tax Notes*. Vol 40, No 5, 2006 [Changes in sales tax collections]  
Richard K. Harper, R. Hawkins, G. Martin, R. Sjolander. "Price Effects Around a Sales Tax Holiday," *Public Budgeting and Finance*. Vol 23, No 4, 2003, pp 108 – 113 [Who wins from sales tax holidays]  
Richard K. Harper and Alfred Cuzan. "Economic Systems," in Hillman, Richard, ed., *Understanding Contemporary Latin America*, Lynne Rienner Publishers, 3<sup>rd</sup> ed. 2005. [Description of Latin American economic structure and issues]  
Feinberg, Robert and Richard K. Harper. "Regime Effects of EU Market Integration Policies on the UK Financial Sector," *Review of Industrial Organization*. Vol 15, No 4, pp 357-365, 1999. [European share price response to banking market integration]

Harper, Richard K. and William Huth. "Japanese Equity Market Response to Administered Protection Decisions," *Managerial and Decision Economics*. Vol. 18, pp 11-26, 1997. [Effects on Japanese stock prices of being named as a respondent in a US antidumping case]

Harper, Richard K. and Stephen Adams. "CERCLA and Deep Pockets: Market Response to the Superfund Program," *Contemporary Policy Issues*. January 1996. [Stock price effects on businesses potentially liable at Superfund sites]

Richard K. Harper, Richard Sjolander and Snorri Gislason. "Using Export to Win! in International Business," in Karakaya, Fahri, ed. *Utilizing Information Technology in International Business*, Haworth Press, 1995. [Evaluation of simulation software for use in teaching international business]

Arguea, Nestor and Richard K. Harper. "Linkages in U.S. and World Sugar Futures Contracts". *Managerial Finance*. Vol 20, No 2, 1994. [Statistical study of sugar futures markets]

Harper, Richard K. "Intellectual Property and Unfair Trade: Market Response to ITC Decisions," *International Journal of the Economics of Business*. Vol 1, No 3: 343-353, 1994. [Wealth effects of International Trade Commission Decisions on intellectual property rights]

Arguea, Nestor, and Richard K. Harper. "Industry Definition and Less Than Fair Value Pricing: An Analysis of ITC Practice," *Journal of Economic Integration*. Vol 6, No 1: 1994. [Case study of International trade Commission practice, using commuter aircraft industry]

Harper, Richard K. and Ronald F. Bush. "Evaluation of Computer Based Information Sources for International Business," *Journal of Teaching in International Business* Vol 4, No 2-3., 1994. [Comparison of computer alternatives in the classroom]

Harper, Richard K. and John Aldrich. "The Political Economy of Sugar Legislation," *Public Choice*, v. 70: 299-314, 1991. [Study of sugar voting in the U.S. Senate, 1962-1987]

Harper, Richard K. *Sugar: Market Structure and Performance*. Fuqua School of Business, Background note # 1950, 1990. [Development/performance of world and U.S. sugar markets]

Harper, Richard K. "Problems in Political Economy." Syllabus and related course materials included in Tower, Edward, ed. *Public Choice, Political Economy, Law and War*. Volume 20, pages 70-76, Eno River Press, Durham, NC, 1990.

RESEARCH MONOGRAPHS AND ARTICLES (Includes those projects completed while at UWF Haas Center. Subsequent client-specific monographs available upon request, subject to possible confidentiality constraints.)

Rick Harper, Phyllis K. Pooley, Michael Schiebe. *Florida Defense Industry Economic Impact Analysis*. Commissioned by Enterprise Florida. January 2011.

Rick Harper. *Economic Impact of a Statutory Teaching Hospital in Escambia County, Florida*. Prepared for Sacred Heart Health System. December 2009.

Rick Harper. *Economic Impact of a Proposed Community Park*. August 2009.

Rick Harper. *Project Odyssey: Training the Astronaut in Everyone*. July 2008.

Rick Harper. *Real Estate Lending and Market Risk*. Prepared for Beach Community Bank. June 2008.

Cassady, J., Harper, R. (2008, May). *Defense Spending Drives Technology-Intensive Clusters Across Florida*. *The Northwest Florida Economy*, Spring 2008.

Rick Harper, Phyllis K. Pooley, Michael Schiebe. *Florida Defense Industry Economic Impact Analysis*. Commissioned by Enterprise Florida. January 2008.

Harper, R. (2007, October). *The Economic Outlook: Slowing Growth for the Nation, Special Risks for Florida*. *The Northwest Florida Economy*, Fall 2007.

Rick Harper, Rod Lewis, Ash Morgan, Melissa Neal, Phyllis Pooley. *Pinellas County, Florida Feasibility Study and Gap Analysis for Centers of Excellence Career Technical High Schools*. Prepared for WorkNet Pinellas and the Pinellas Education Foundation. September 2007.

Harper, R., Morgan, A., Neal, M., Pooley, P. (2007, August). *Needs Assessment of Career-Technical Education in Florida*. *The Northwest Florida Economy*, Summer 2007.

Rick Harper. *Economic Impact of Military Personnel Realignment in Okaloosa County*. Commissioned by Economic Development Council Okaloosa County, Florida. August 2007.

Rick Harper. *Needs Assessment Report: Financial and Professional Services*. Prepared for Employ Florida Banner Center of Excellence. July 2007.

Rick Harper. Needs Assessment Report: Career-technical Education. Prepared for Employ Florida Banner Center of Excellence. July 2007.

Rick Harper. Economic Impact of the 2006 NCAA Division II National Championships Festival on the Pensacola MSA. Prepared for Intercollegiate Athletic Department, University of West Florida. April 2007.

Tolbert Ennis, Rick Harper, Angela Loiselle, Phyllis K. Pooley, Michael Scheibe, Jennifer Whitfield. Okaloosa County School District Customer Satisfaction Survey. Commissioned by Okaloosa County School District. January 2007.

Harper, R. (2007, January). Department of Community Affairs: Sustainable Emerald Coast. The Northwest Florida Economy, Winter 2007.

Rick Harper and Ash Morgan. Measuring the Value-added of the CHOICE Institutes. Commissioned by Okaloosa County School District. August 2006.

Rick Harper. Economic Impact of the 2005 BRAC Relocations for Okaloosa, Santa Rosa and Walton Counties. Prepared for Science Applications International Corporation. August 2006.

Rick Harper, Ash Morgan, Carrie Morgan. Workforce Region II Gap Analysis. June 2006.

Harper, R. (2006, April). Impact of Freezing Development on Perdido Key. The Northwest Florida Economy, Spring 2006.

Rick Harper, Ash Morgan, Carrie Morgan. Demand for Workforce Housing in Northwest Florida. Prepared for Florida's Great Northwest. March 2006.

Tolbert Ennis, Rick Harper, Angela Loiselle, Phyllis K. Pooley, Michael Scheibe, Susan Shaw, Jennifer Whitfield. Okaloosa County School District Customer Satisfaction Survey. Commissioned by Okaloosa County School District. February 2006.

Rick Harper, Ash Morgan, Carrie Morgan. Economic Analysis of the Contribution of Choctawhatchee Bay to Okaloosa and Walton Counties. Commissioned by Choctawhatchee Basin Alliance. December 2005.

Rick Harper. Economic Impact of the 2005 BRAC Relocations in Okaloosa County. Prepared for Economic Development Council Okaloosa County, Florida. November 2005.

Rick Harper and Phyllis Pooley. Economic Impact of a Large Boat Marina. Commissioned by Economic Development Council Okaloosa County, Florida. November 2005.

Harper, R. (2005, October). The Economic Impact of Ivan: One Year Out. The Northwest Florida Economy, Fall 2005.

Harper, R. (2005, October). Okaloosa County School District Parent Satisfaction Survey. The Northwest Florida Economy, Fall 2005.

Woodrow W. Cushing and Rick Harper. Economic Impact Reactivation NAS Cecil Field. Commissioned by Enterprise Florida, Inc. September 2005.

Harper, R. (2005, July). BRAC Hits Pensacola. The Northwest Florida Economy, Summer 2005.

Tolbert Ennis, Rick Harper, Matthew Mirkowski, Phyllis K. Pooley, Michael Scheibe, Susan A. Shaw. Okaloosa County School District Customer Satisfaction Survey. Commissioned by Okaloosa County School District. May 2005.

Rick Harper and Phyllis Pooley. Economic Impact of Proposed Community Park. Prepared for Dr. John Cavanaugh, President, University of West Florida. February 2005.

Harper, R., Morgan, A. (2005, February). Hurricane Ivan Update. The Northwest Florida Economy, Winter 2005.

Harper, R. (2005, February). The Defense-Related Aviation/Aerospace Cluster in Okaloosa County. The Northwest Florida Economy, Winter 2005.

Harper, R. (2004, December). The Economic Impact of Hurricane Ivan. The Northwest Florida Economy, Winter 2005.

Woodrow W. Cushing and Rick Harper. Florida Defense Industry Economic Impact Analysis. Commissioned by Enterprise Florida. December 2003.

Harper, R., and Neal, M. (2003, October). Economic Impact of Tourism to Beaches of South Walton/Walton County. The Northwest Florida Economy, Fall 2003.

Rick Harper, William L. Huth, Shannon Ogletree, Christine Pierce, Phyllis Pooley, Don Pulley. Department of Defense Florida Expenditures and Economic Impact Analysis for the Fiscal Year Ending 2002. Prepared for Enterprise Florida, Inc. September 2003.



Rick Harper. Supply Gaps and Surpluses in the Defense-Related Aviation/Aerospace Cluster in Okaloosa County. Prepared for Economic Development Council Okaloosa County, Florida. September 2003.

Harper, R. (2003, July). Reading New Metro Area Definitions Affect Northwest Florida. The Northwest Florida Economy, Summer 2003.

Harper, R. (2002, October). Reading Tea Leaves Economic Uncertainty Abounds. The Northwest Florida Economy, Fall 2002.

Stephen J. Conroy and Rick Harper. Downtown Improvement Board Project: Summary of Findings. Prepared for Downtown Improvement Board. September 2000.

Rick Harper. An Evaluation of the CSL Study of the Economic and Fiscal Impact of a Proposed Pensacola Beach Convention Center. Prepared for Santa Rosa Island Authority. June 2000.

Raymond Grant, Rick Harper, Guy Livingston. Economic Impact Study: Proposed Real Estate Development in Perdido Key. Commissioned by Perdido Key Chamber of Commerce. March 2000.

Rick Harper and Chris Pierce. Relocation/Productivity Survey Results CIGNA Corporation. Prepared for Mr. Tony Marchese, CIGNA Corporation. January 2000.

Rick Harper, Guy Livingston, Chris Pierce. Economic Impact Study Okaloosa County Conference Center. Commissioned by Dr. Dianne Barlar, University of West Florida. December 1999.

Kristine M. Artilles, Rick Harper, Kelly J. Mershon, Christine K. Smith. Economic Impact of Military Activity in the I-10 Technology Corridor. Prepared for Economic Development Council Okaloosa County, Florida. July 1999.

Richard K. Harper, Kelly J. Mershon, Christine K. Smith. Economic Effects of Technology Initiatives and Activities in Okaloosa County. Prepared for Economic Development Council Okaloosa County, Florida. March 1999.

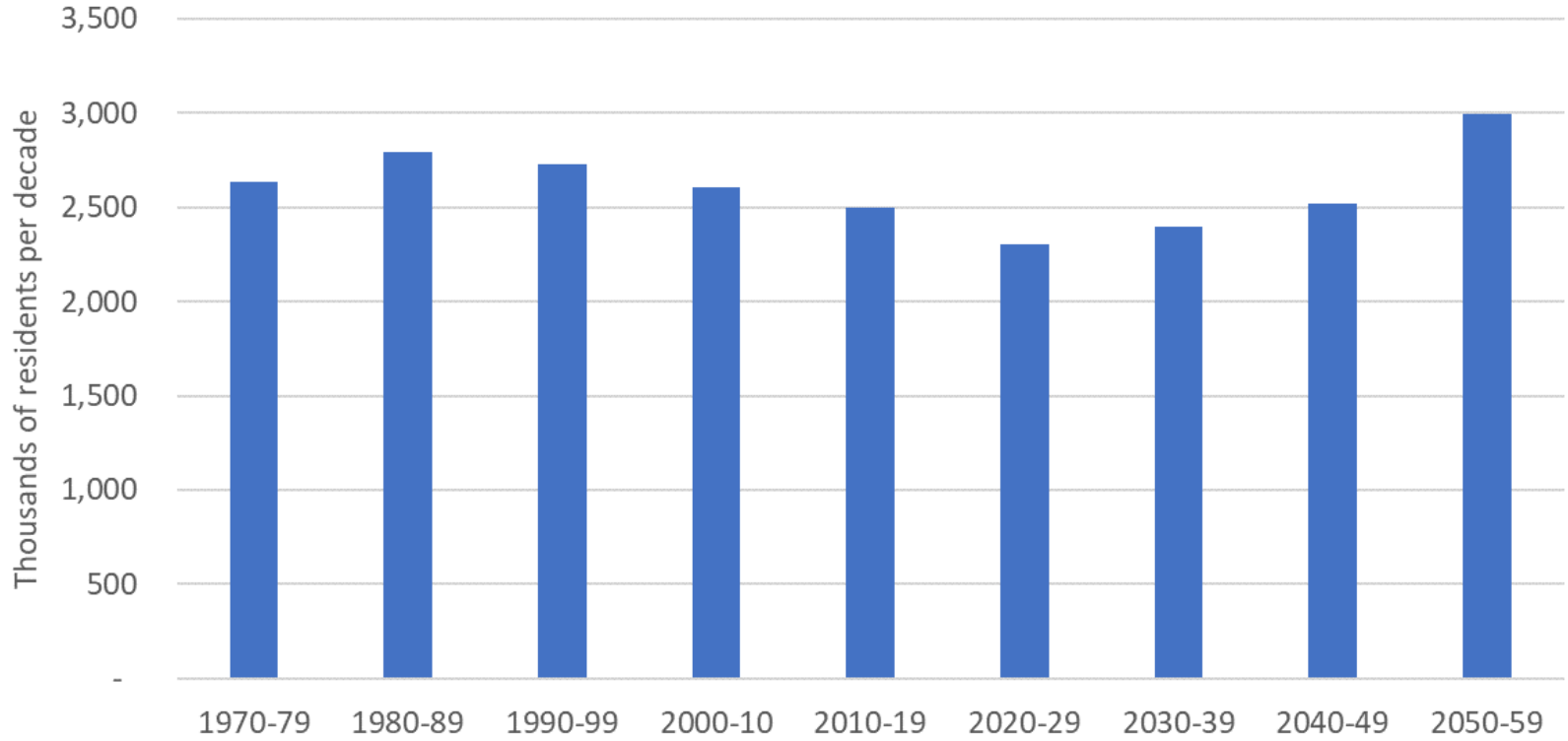
Javed Ashraf, Richard K. Harper, Sabi Kastro, Greg S. Martin. Wage Comparability Study of Head Start Agencies. Prepared for Head Start Agencies. May 1998.

## Endnotes

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- <sup>i</sup> United States Census Bureau. "Historical Population Change Data (1910 - 2020)", <https://www.census.gov/data/tables/time-series/dec/popchange-data-text.html>
- <sup>ii</sup> United States Census Bureau. "Historical Population Change Data (1910 - 2020)", <https://www.census.gov/data/tables/time-series/dec/popchange-data-text.html>
- <sup>iii</sup> Woods & Poole Economics. Complete Economic and Demographic Data Source (CEDDS), Florida Profile, 2022.
- <sup>iv</sup> <https://www.house.gov/representatives>
- <sup>v</sup> <https://history.house.gov/Congressional-Overview/Profiles/82nd/>
- <sup>vi</sup> <https://www.census.gov/newsroom/press-releases/2022/2022-population-estimates.html>
- <sup>vii</sup> Woods & Poole Economics. Complete Economic and Demographic Data Source (CEDDS), Florida Profile, 2022.
- <sup>viii</sup> See, e.g., Harper, R. "The Economic Impact of Natural Gas in Florida," prepared for the Florida Natural Gas Association, October 2020. These benefits include lower consumer prices and health benefits.
- <sup>ix</sup> The prices that are monitored include food, clothing, shelter, fuels, service fees, and sales taxes. See, e.g., <https://www.bls.gov/cpi/>.
- <sup>x</sup> A more detailed explanation of the CPE Index can be found at <https://www.bea.gov/data/personal-consumption-expenditures-price-index>.
- <sup>xi</sup> A discussion of the Federal Open Market Committee's maximum employment, stable prices, and moderate long-term interest rate goals, and an inflation rate that averages 2 percent over time, can be found at: [https://www.federalreserve.gov/monetarypolicy/files/fomc\\_longerrungoals.pdf](https://www.federalreserve.gov/monetarypolicy/files/fomc_longerrungoals.pdf)
- <sup>xii</sup> Woods & Poole Economics. Complete Economic and Demographic Data Source (CEDDS), Florida Profile, 2022.
- <sup>xiii</sup> The February 2023 Short Term Energy Outlook from the Energy Information Administration ("EIA") forecast shows natural gas prices declining to pre-Russian / Ukraine war levels. EIA forecast the natural gas price at the Henry Hub will average \$3.40/MMBtu in 2023. <https://www.eia.gov/todayinenergy/detail.php?id=55539>
- <sup>xiv</sup> See, e.g., Harper, R. "The Economic Impact of Natural Gas in Florida," prepared for the Florida Natural Gas Association, October 2020.
- <sup>xv</sup> Stephen Holland, et al. "Decompositions and Policy Consequences of an Extraordinary Decline in Air Pollution from Electricity Generation," NBER Working Paper 25339, December 2018. More specifically, for generation plants in 2017 versus 2010, some \$31bn in reductions were achieved by retiring coal plants, \$32bn from reduced emissions from existing coal plants (due to lower usage rates), and \$5.3bn from switching existing coal-fired plants to gas. While the total contribution of gas to pollution increased \$6.8bn due to greater usage due to new capacity, this was offset by reducing about 10 times as much pollution from coal-fired plants.
- <sup>xvi</sup> The Florida Natural Gas Summary is available at [https://www.eia.gov/dnav/ng/ng\\_sum\\_lsum\\_dcu\\_sFL\\_m.htm](https://www.eia.gov/dnav/ng/ng_sum_lsum_dcu_sFL_m.htm)

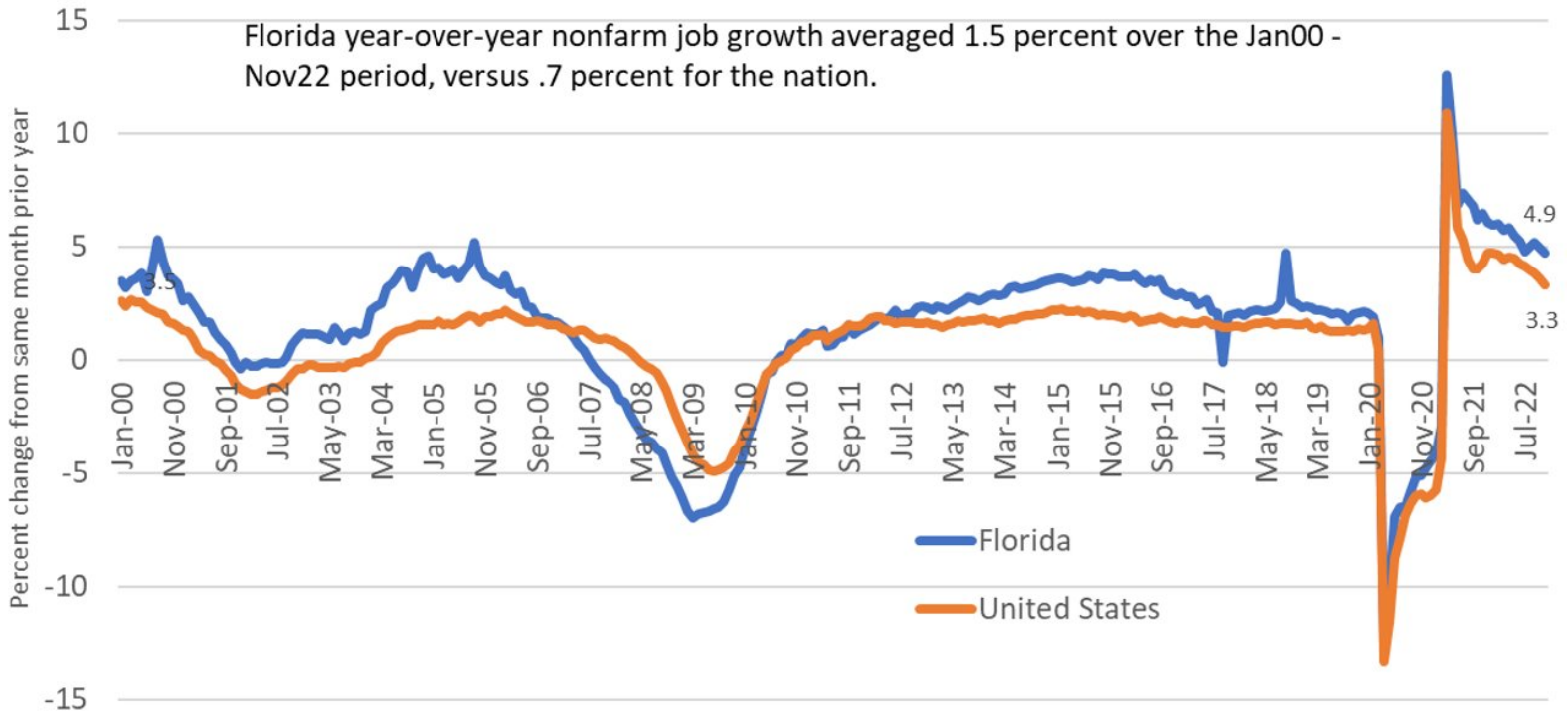
<sup>xvii</sup> The U.S. Nuclear Energy Institute reports that in 2021, only Delaware, Massachusetts, and Rhode Island had a higher share of net electricity generated within their borders than Florida.  
<https://www.nei.org/resources/statistics/state-electricity-generation-fuel-shares>

### Population Growth in Florida by Decade, 1970 - 2059



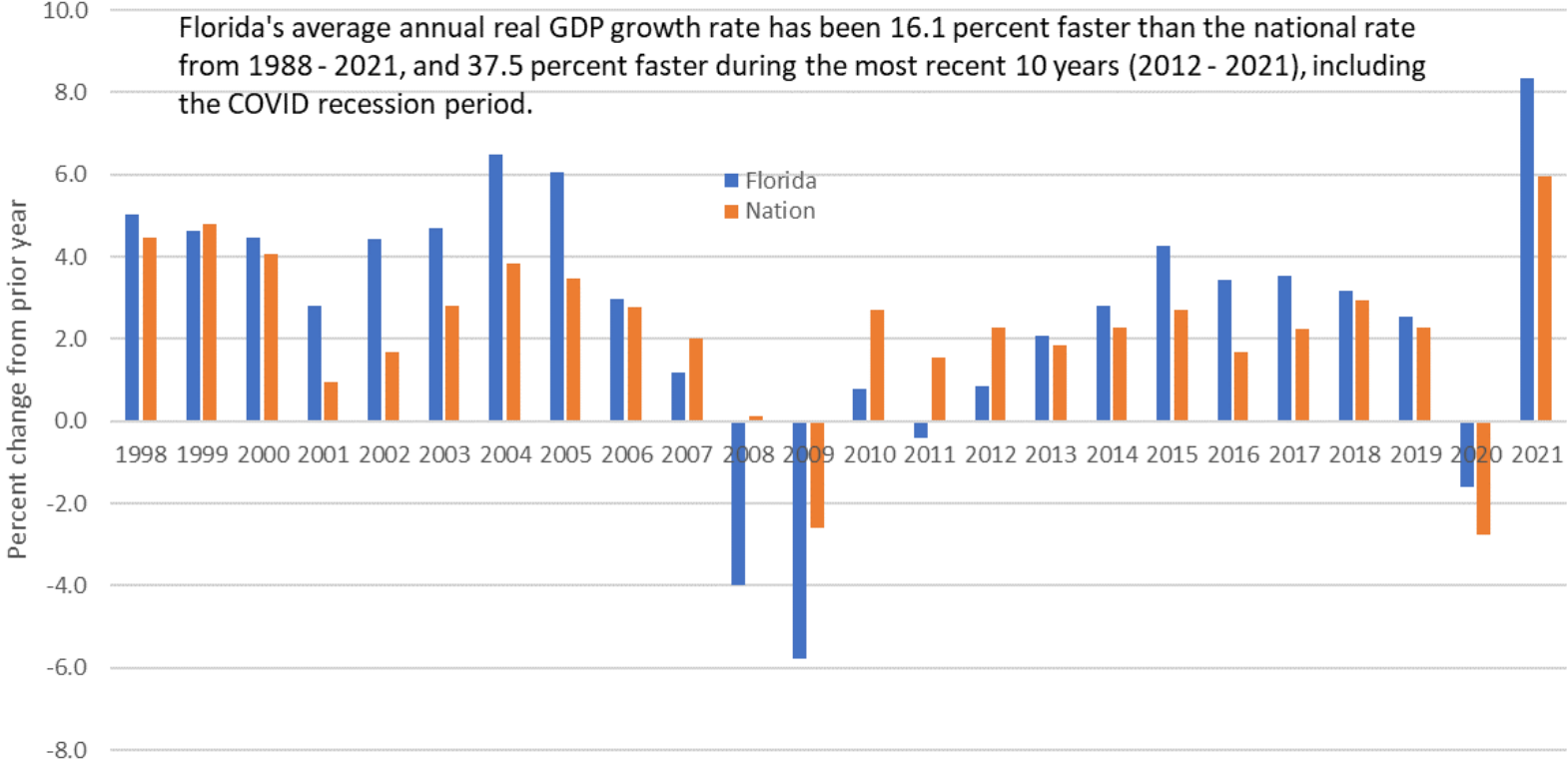
Source: Woods & Poole Economics, CEDDS, 2022

Nonfarm Payroll Jobs, Florida and U.S., Jan00 - Nov22,  
Seasonally Adjusted, Percent Change from Same Month Prior Year



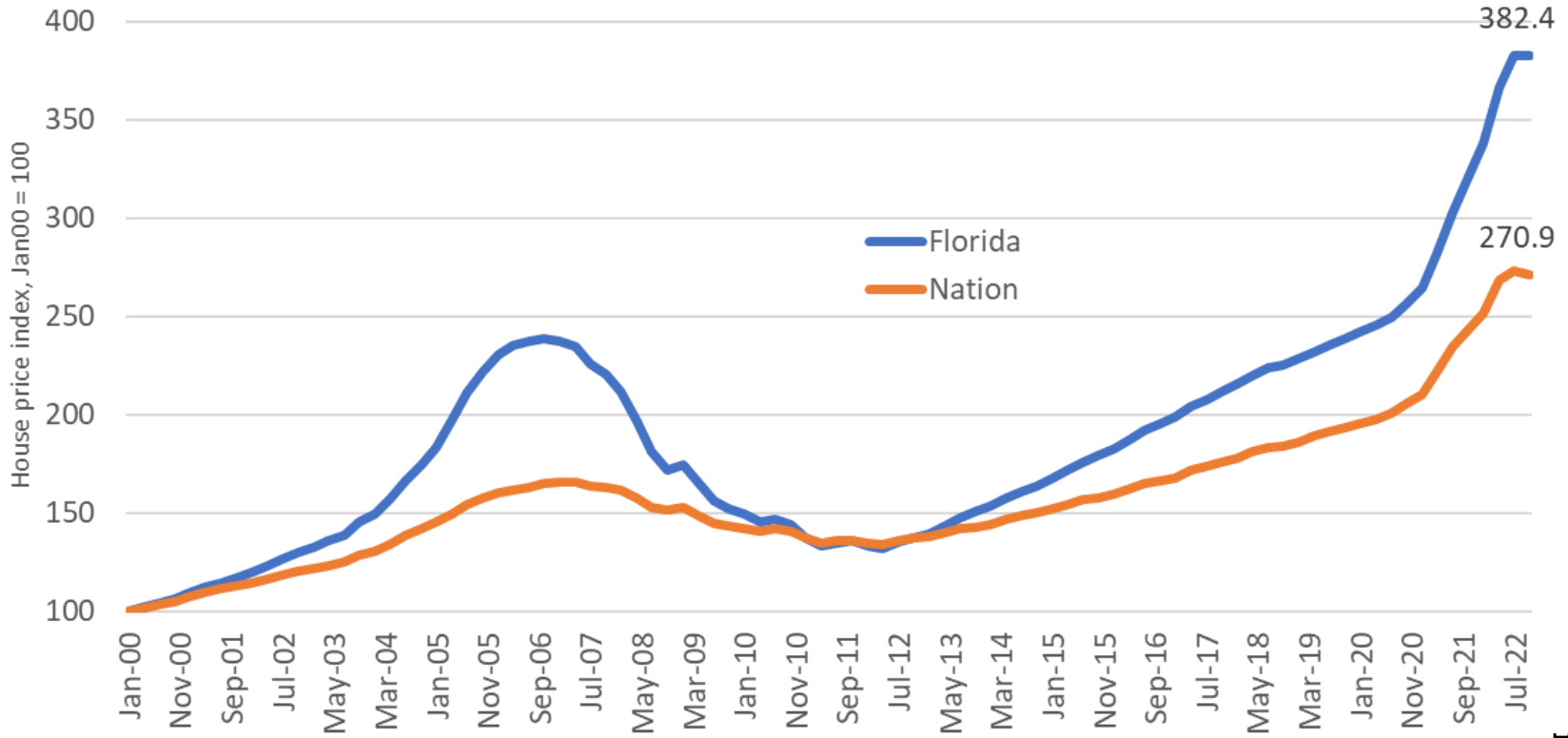
Source: U.S. Bureau of Labor Statistics, via Federal Reserve Economic Data (FRED)

### Annual real GDP Growth Rate, Florida and the Nation, 1988 - 2021



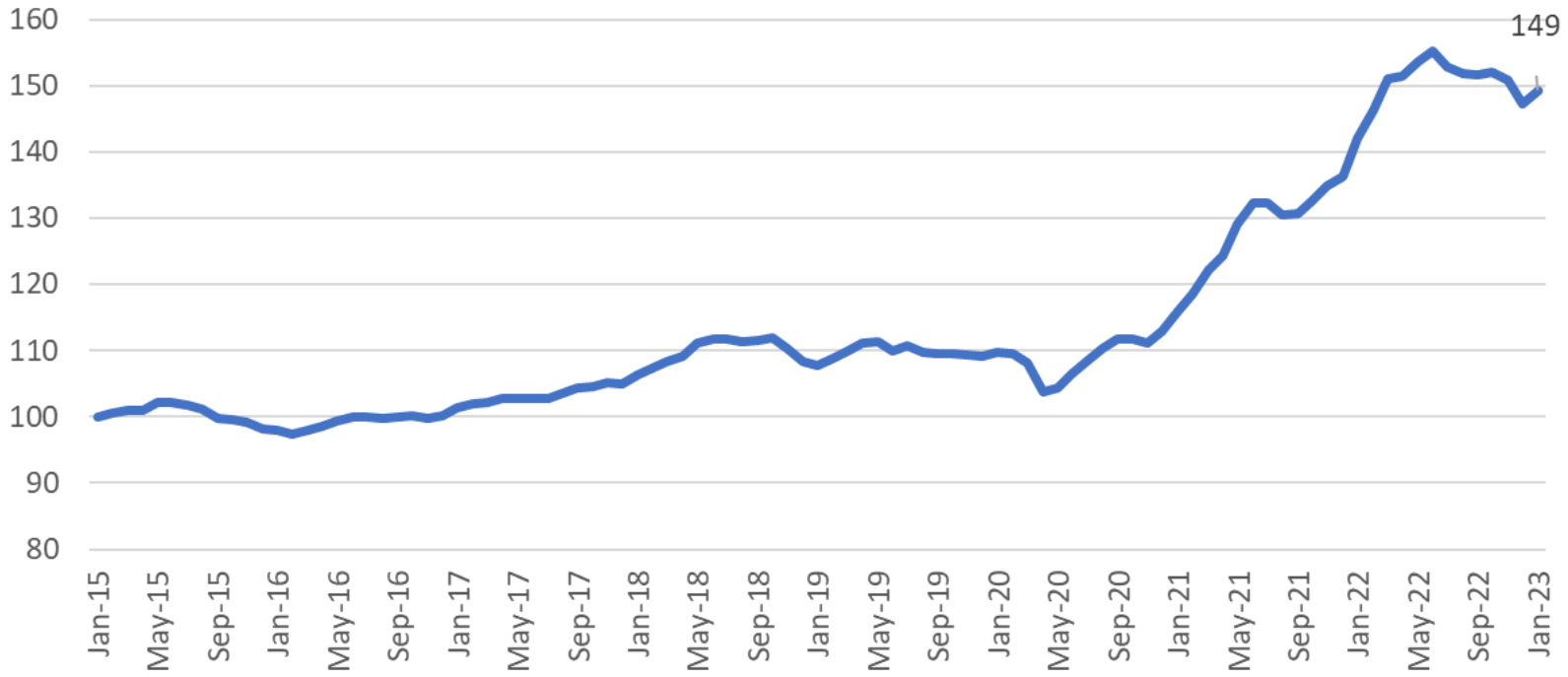
Source: U.S. Bureau of Economic Analysis, via Federal Reserve Economic Database (FRED)

All Transactions House Price Index, Florida and U.S., Jan00 - Oct22



Source: U. S. Federal Housing Finance Agency

Producer Price Index, Residential Construction Inputs, Jan15 - Feb23,  
Jan15=100

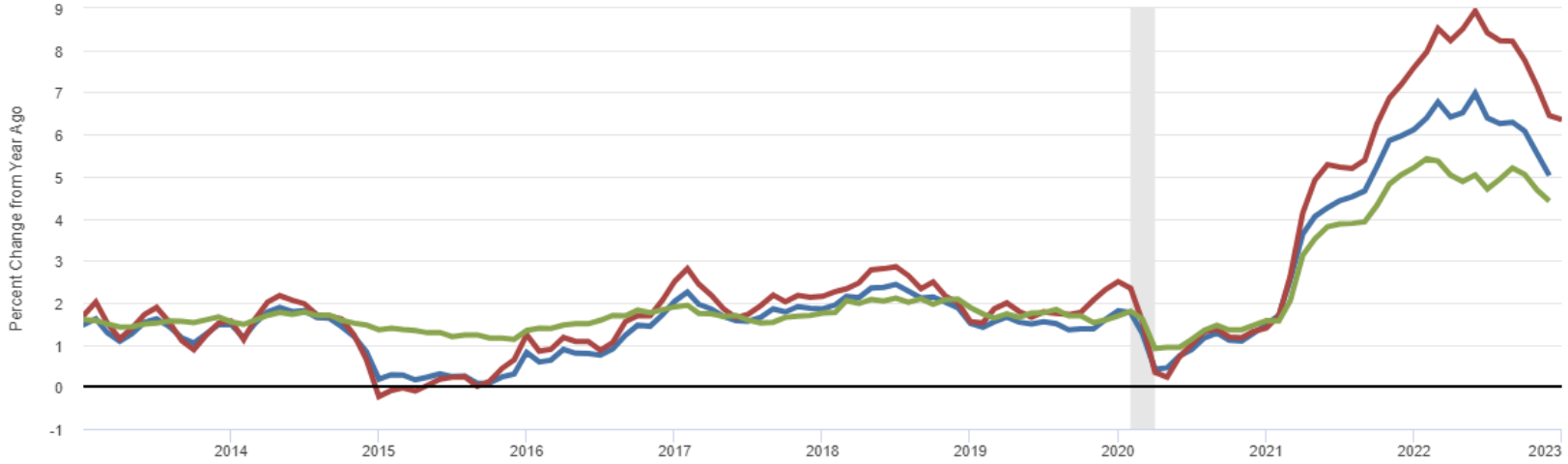


Source: U.S. BLS, series ID WPUIP2311001



FRED

Personal Consumption Expenditures: Chain-type Price Index  
Consumer Price Index for All Urban Consumers: All Items in U.S. City Average  
Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index)

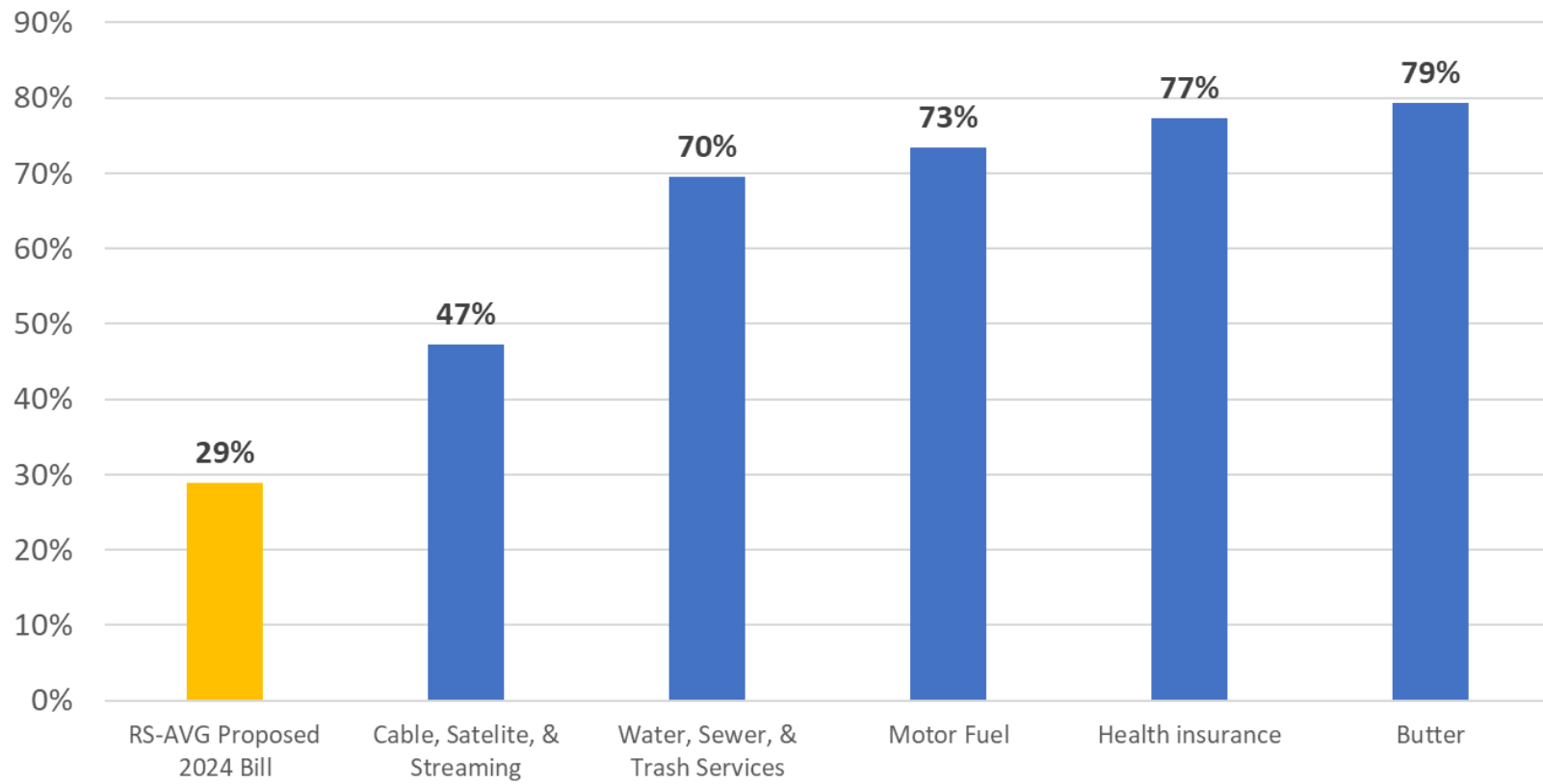


Shaded areas indicate U.S. recessions.

Sources: BEA; BLS

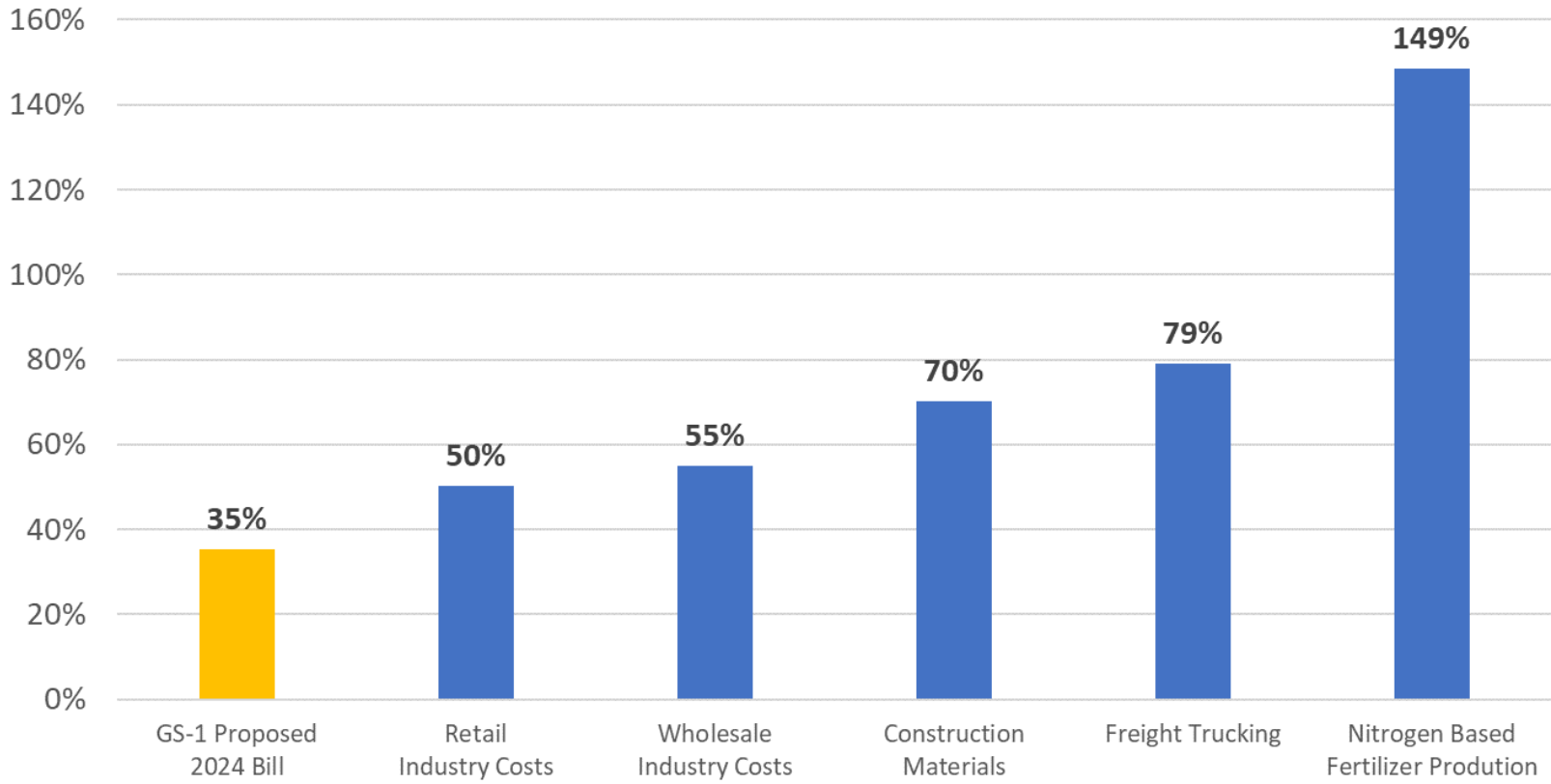
fred.stlouisfed.org

### Cumulative Increase in Household Costs for PGS Customers



Residential metrics retrieved from BLS Consumer Price Indexes (CPI) for 2009 through 2022. Proposed bill impacts are calculated from our 2009 bills compared to our proposed 2024 bills.

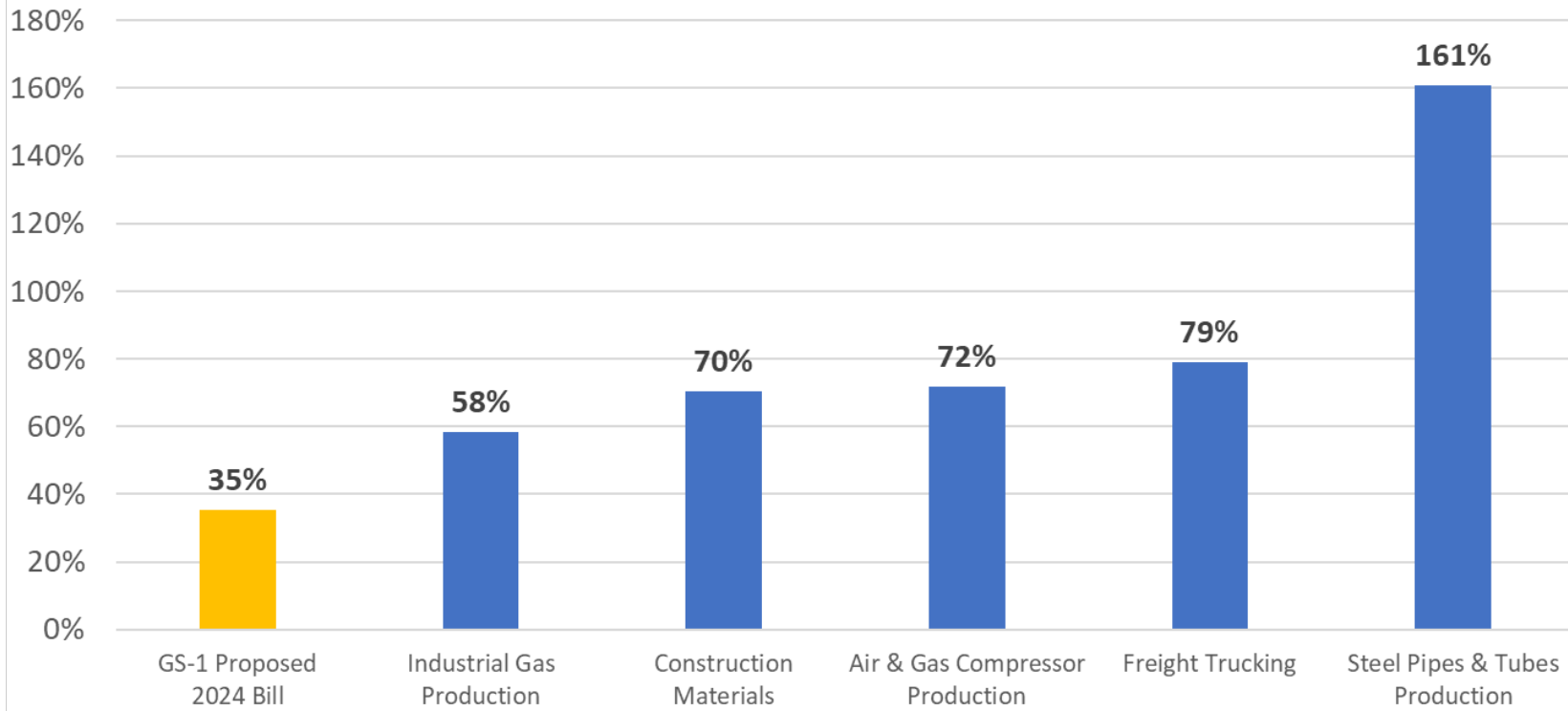
### Cumulative Increase in Business Costs for PGS Customers



Commercial metrics retrieved from BLS Producer Price Indexes (PPI) for 2009 through 2022. Proposed bill impacts are calculated from our 2009 bills compared to our proposed 2024 bills.

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### Cumulative Increase in Relevant PGS Business Costs

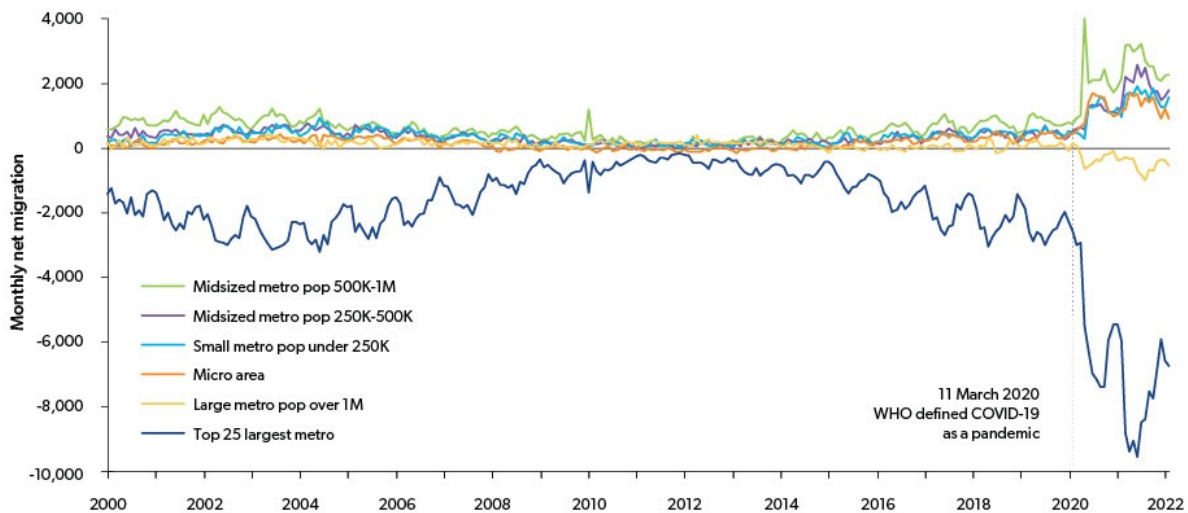


Commercial metrics retrieved from BLS Producer Price Indexes (PPI) for 2009 through 2022.  
Proposed bill impacts are calculated from our 2009 bills compared to our proposed 2024 bills.

EXHIBIT 1

### Typology for homebuyer net migration based on metro population size

The COVID-19 pandemic resulted in a rapid acceleration of existing homebuyer migration flows out of the country's largest metro areas and into less densely populated areas.



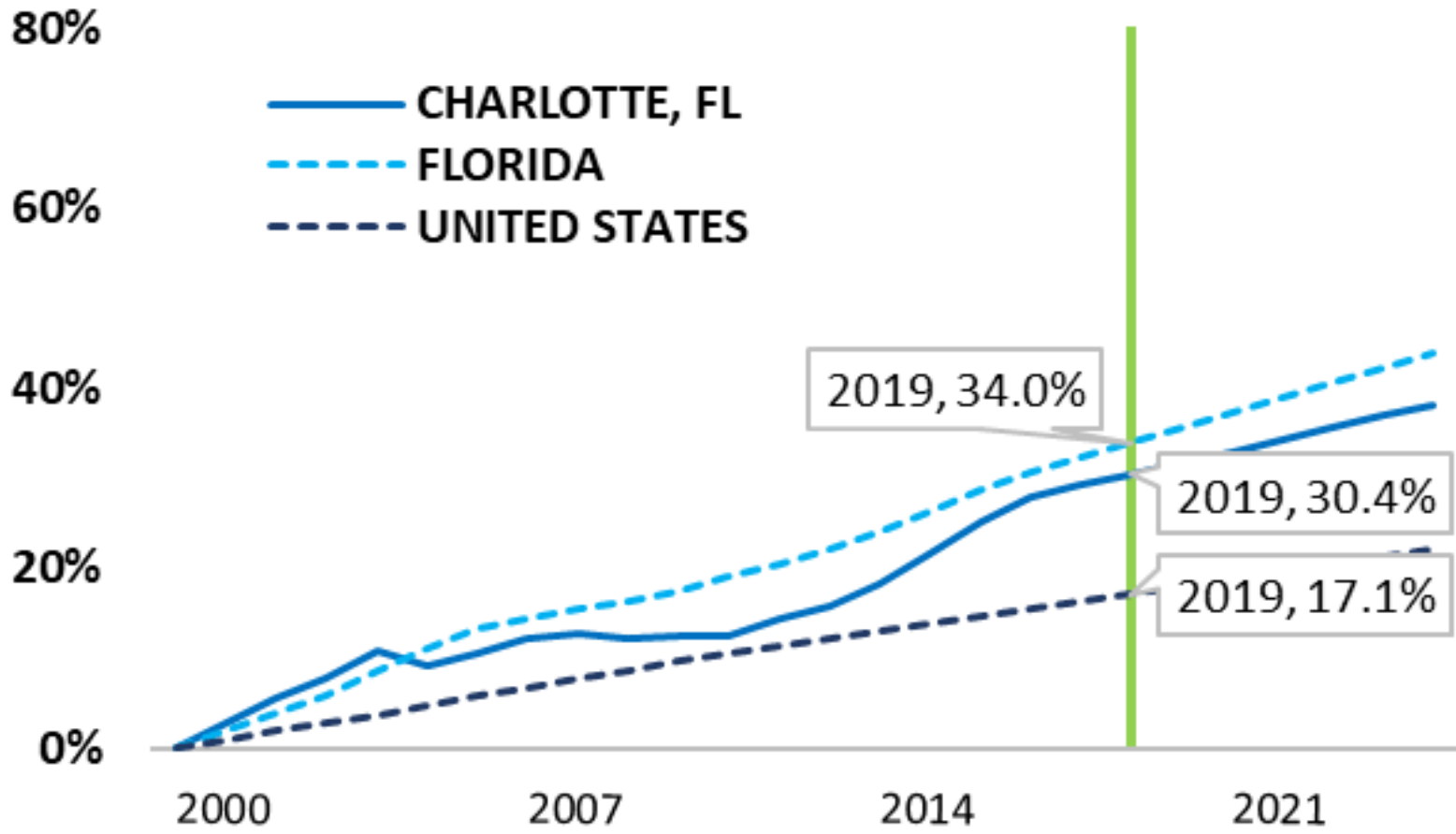
Sources: Freddie Mac Loan Product Advisor®

U.S. Census Bureau, "Metropolitan and Micropolitan Statistical Area Population Estimates and Estimated Components of Change: April 1, 2010 to July 1, 2019 (CBSA-EST2019-alldata)," retrieved from <https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-metro-and-micro-statistical-areas.html>.

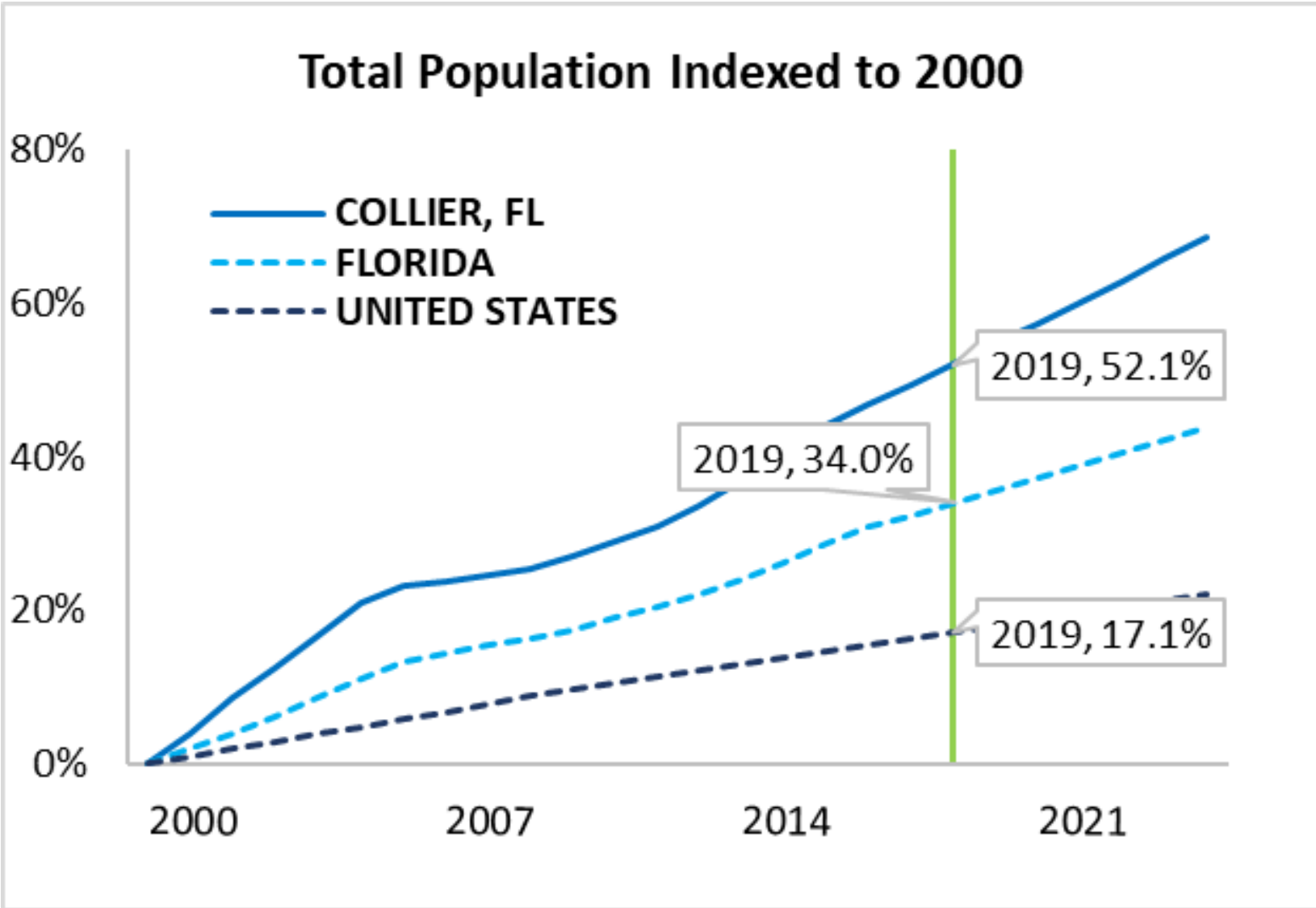
Source: FreddieMac, June 22, 2022 "In Pursuit of Affordable Housing: The Migration of Homebuyers within the US Before and After the Pandemic

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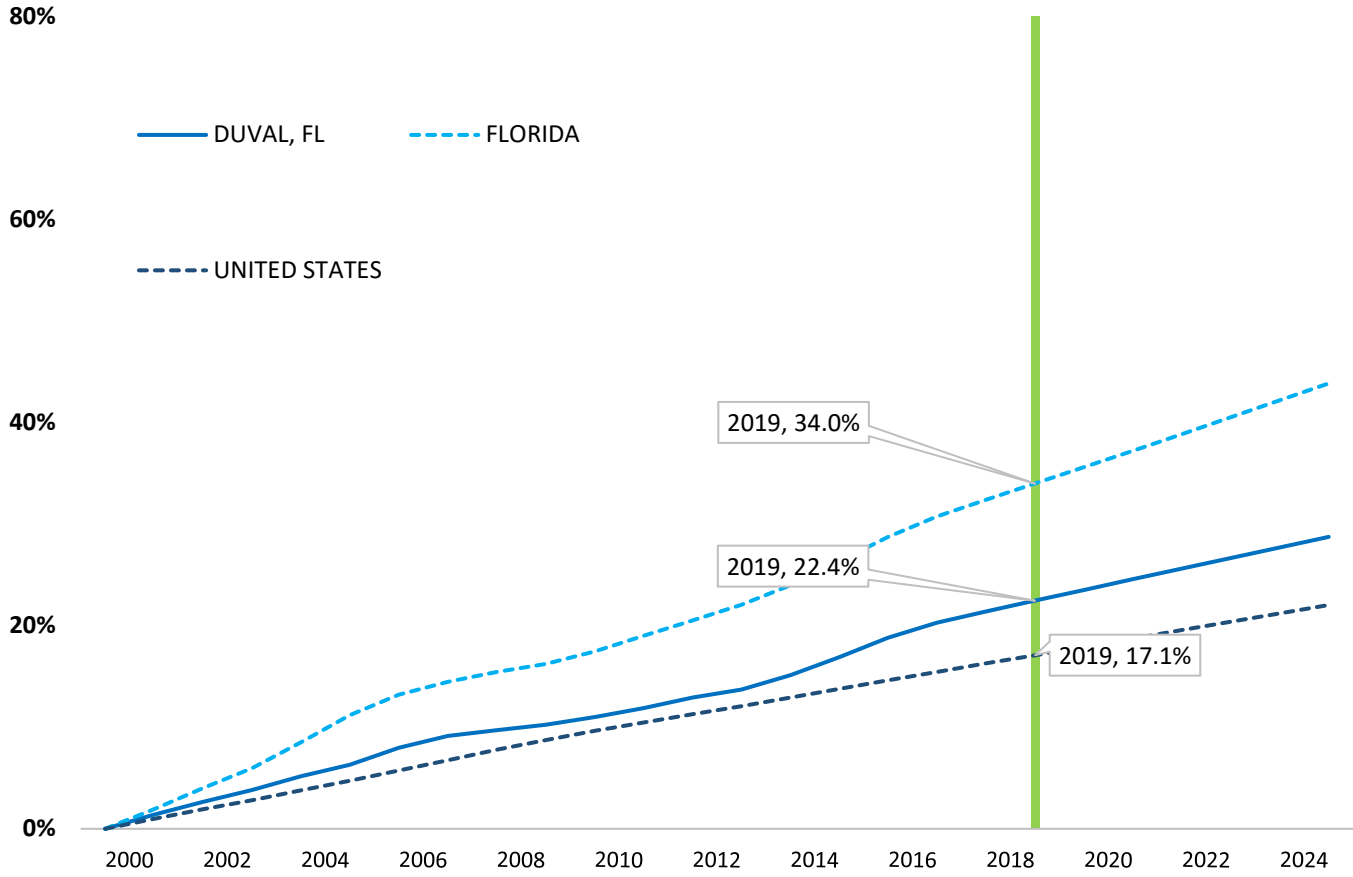
# Total Population Indexed to 2000



43

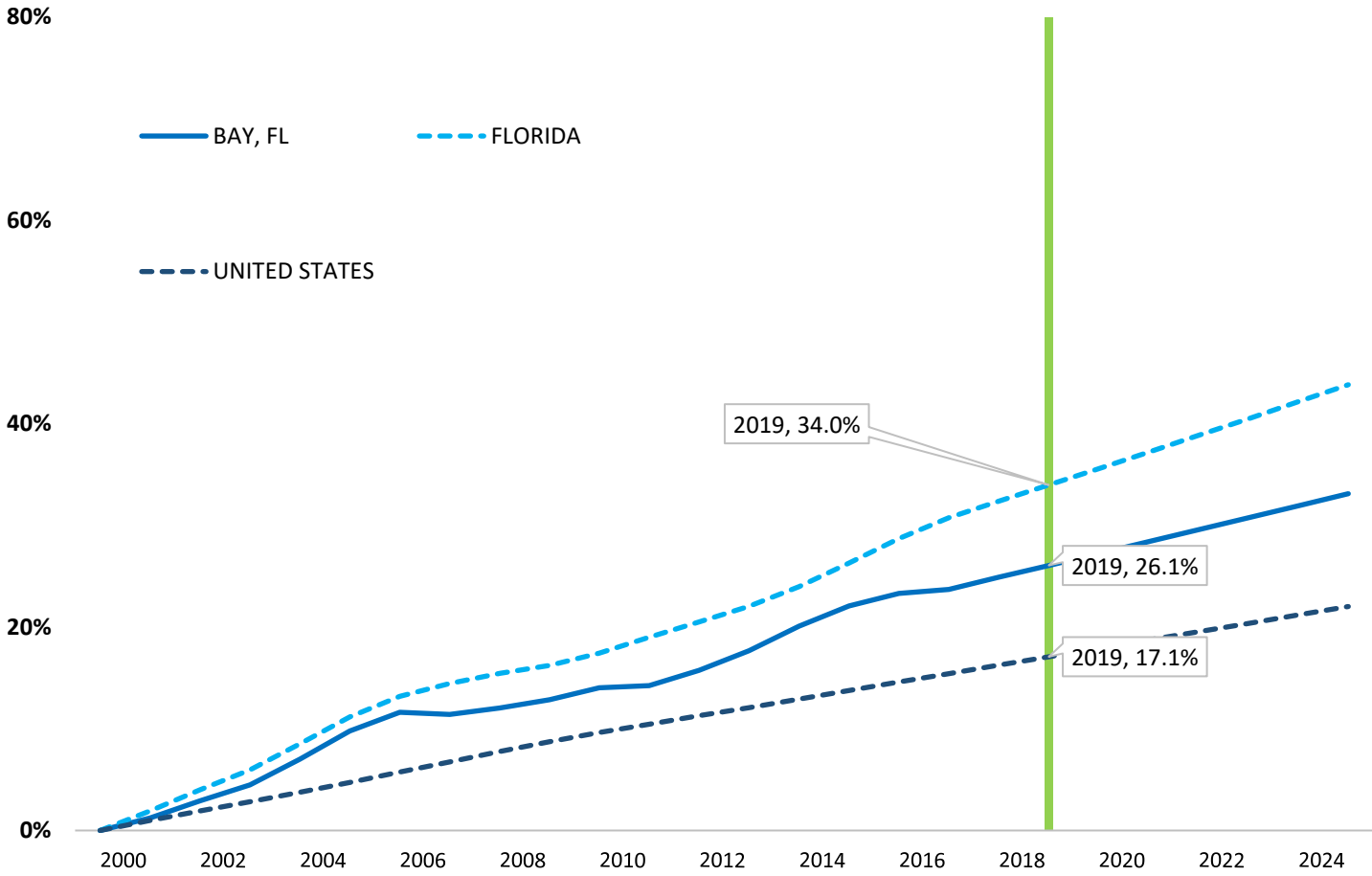


Total Population Indexed to 2000

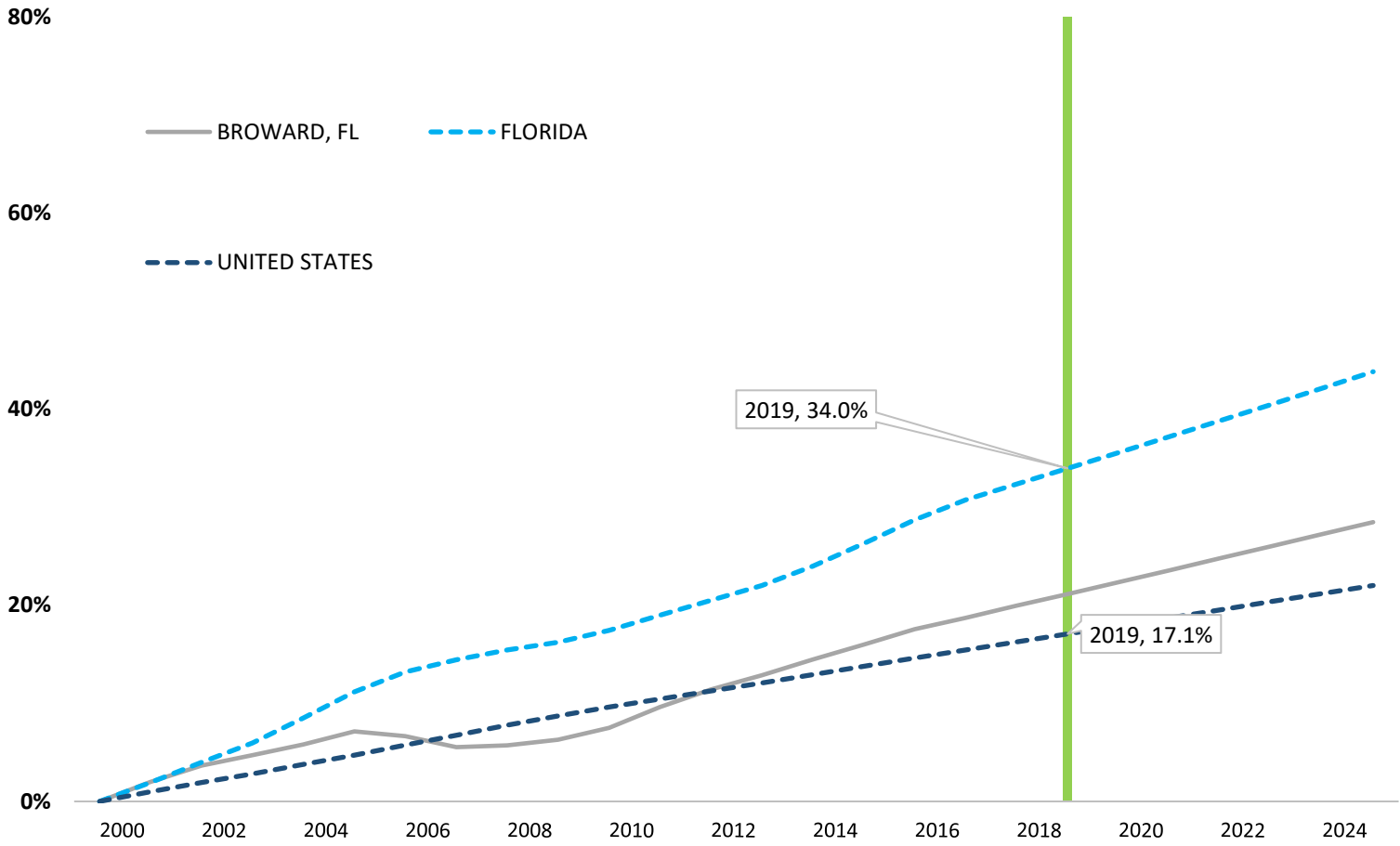




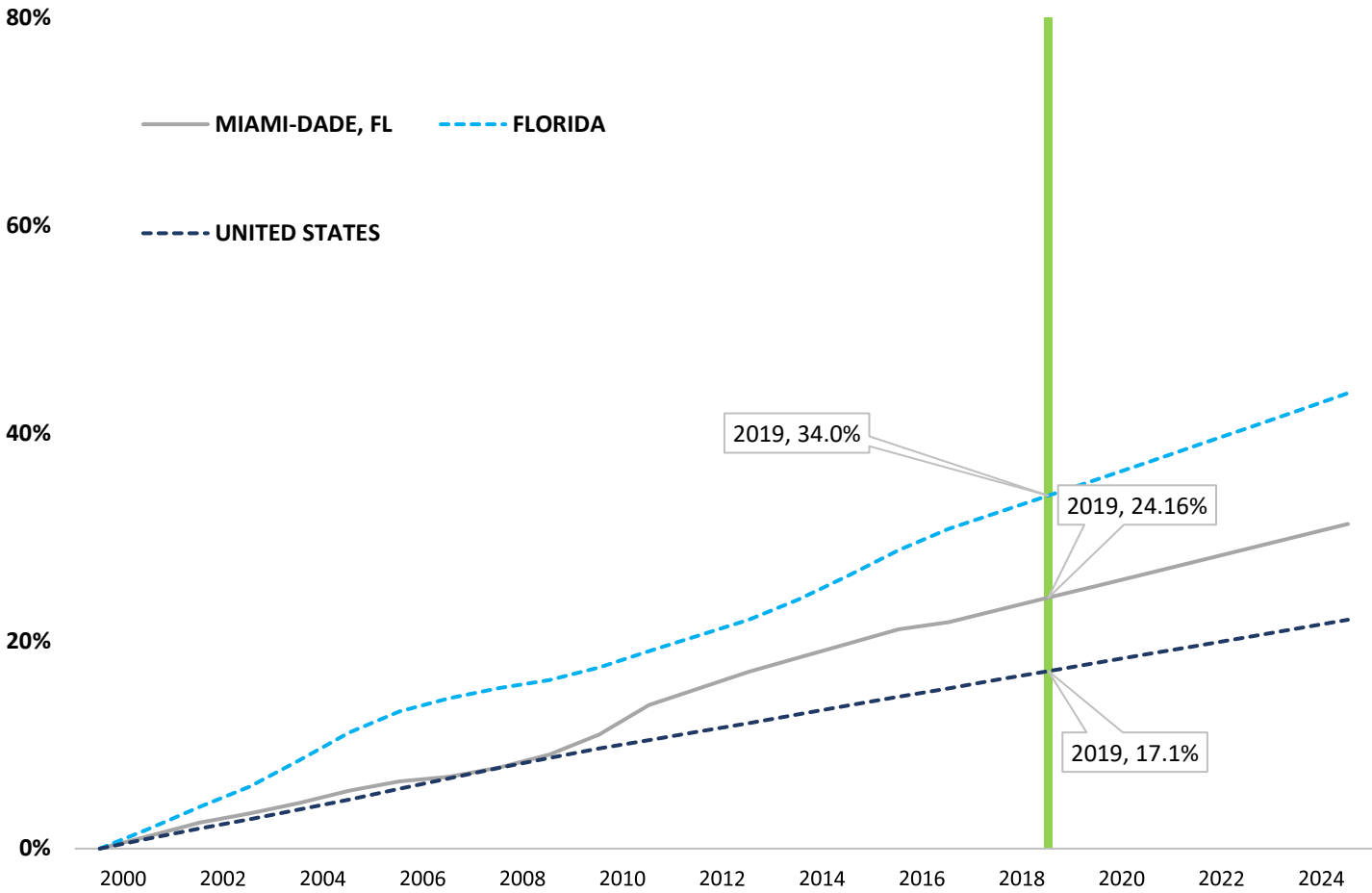
Total Population Indexed to 2000

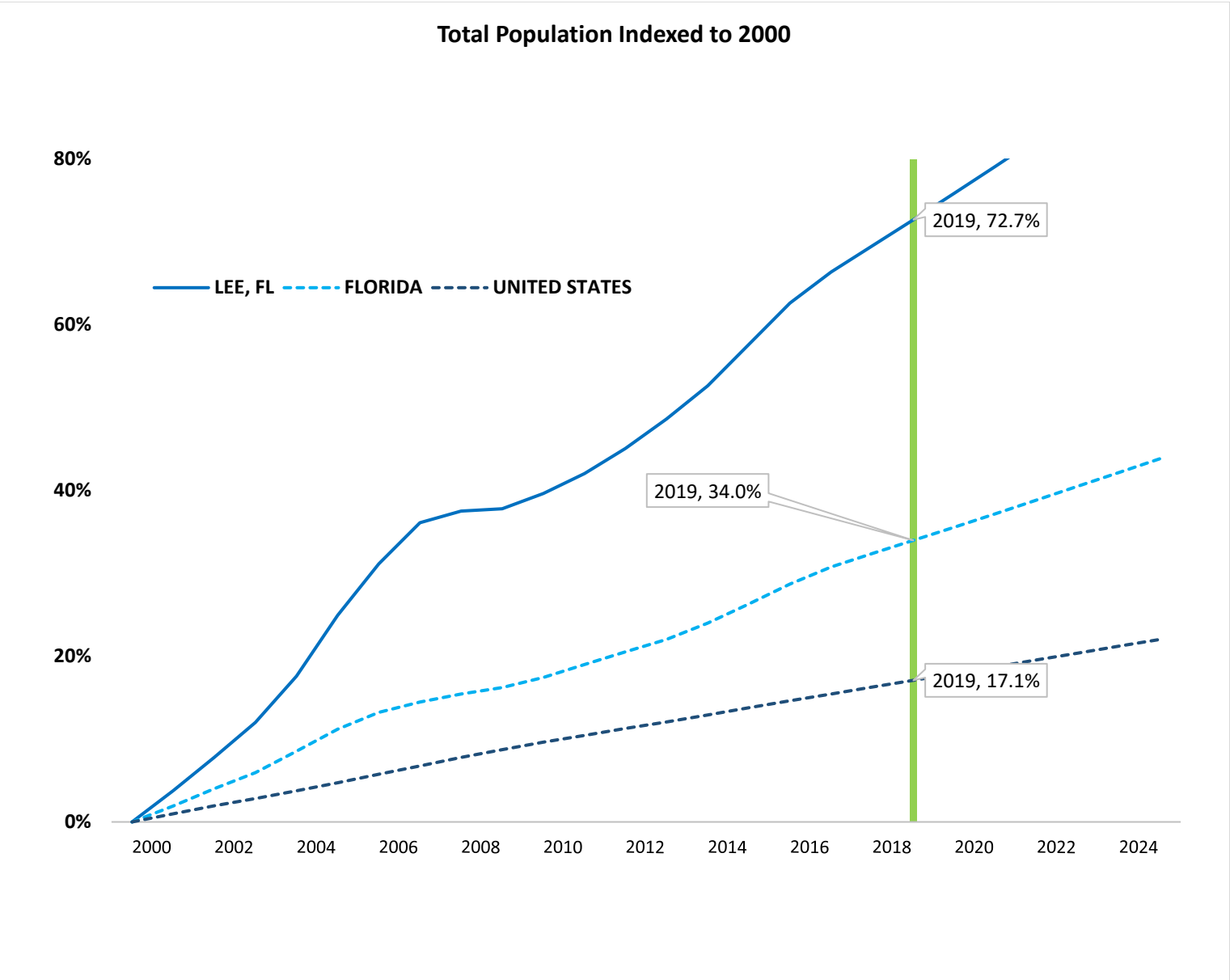


### Total Population Indexed to 2000



Total Population Indexed to 2000





Total Population Indexed to 2000

