
# *Analysis of Florida's Defense Incentives and Industry*

**Fiscal Years 2020-21, 2021-22, and 2022-23**

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# EXECUTIVE SUMMARY

**Background and Purpose**

Legislation enacted in 2013 and revised in 2014 directs the Office of Economic and Demographic Research (EDR) and the Office of Program Policy Analysis and Government Accountability (OPPAGA) to analyze and evaluate state economic development incentive programs on a recurring three-year schedule.[1] EDR is required to evaluate the economic benefits of each program, using project data from the most recent three-year period, and to provide an explanation of the model used in its analysis and the model's key assumptions. Economic Benefit is defined as "the direct, indirect, and induced gains in state revenues as a percentage of the state's investment" – which includes "state grants, tax exemptions, tax refunds, tax credits, and other state incentives."[2] EDR's evaluation also requires identification of jobs created, the increase or decrease in personal income, and the impact on state Gross Domestic Product (GDP) for each program.

In this report, the following incentives are under review:

- The three grant programs under the umbrella of s. 288.980, F.S. (the Military Base Protection Grant Program, the Florida Defense Infrastructure Grant Program, and the Florida Defense Reinvestment Grant Program);
- The Florida Defense Support Task Force Grants under the authority of s. 288.987, F.S.; and
- The Sales Tax Exemption for Manufacturing and Equipment Used in Semiconductor, Defense, or Space Technology Production established by s. 212.08(5)(j), F.S.

The review period covers Fiscal Years 2020-21, 2021-22, and 2022-23. This is EDR's fourth evaluation of these incentives.[3]

**Explanation of Return-on-Investment**

In this report, the term "Return on Investment" (ROI) is synonymous with economic benefit and is used in lieu of the statutory term. This measure does not address issues of overall effectiveness or societal benefit; instead, it focuses on tangible financial gains or losses to state revenues. As such, it is ultimately conditioned by the state's tax policy.

The ROI is developed by summing state revenues generated by a program less state expenditures invested in the program, and dividing that calculation by the state's investment. It is most often used when a project is to be evaluated strictly on a monetary basis, and externalities and social costs and benefits—to the extent they exist—are excluded from the evaluation. The basic formula is:

$$\frac{\text{(Increase in State Revenue – State Investment)}}{\text{State Investment}}$$

[1] Section 288.0001, F.S. In the 2025 Florida Statutes, 18 programs are specified. This analysis is based on s. 288.0001(2)(c)1-2, F.S.: the tax exemption for semiconductor, defense, or space technology sales established under s. 212.08(5)(j), F.S., and the Military Base Protection Program established under s. 288.980, F.S.

[2] Section 288.005(1), F.S.

[3] The previous reports can be found at EDR's website: http://edr.state.fl.us/Content/returnoninvestment/. The Qualified Defense Contractor and Space Flight Business Tax Refund Program sunset in 2014.

Since EDR's Statewide Model[4] is used to develop these computations and to model the induced and indirect effects, EDR can simultaneously generate State Revenue and State Investment from the model so all feedback effects mirror reality. The result (a net number) is used in the final ROI calculation.

As used by EDR for this analysis, the returns can be categorized as follows:

- **Greater Than One (>1.0)**…the program more than breaks even; the return to the state produces more revenues than the total cost of the investment.
- **Equal To One (=1.0)**…the program breaks even; the return to the state in additional revenues equals the total cost of the investment.
- **Less Than One, But Positive (+, <1)**…the program does not break even; however, the state generates enough revenues to recover a portion of its cost of the investment.
- **Less Than Zero (-, <0)**…the program does not recover any portion of the investment cost, and state revenues are less than they would have been in the absence of the program. This typically occurs because taxable activity is shifted to non-taxable activity.

The numerical ROI can be interpreted as return in tax revenues for each dollar spent by the state. For example, a ROI of 2.5 would mean that $2.50 in tax revenues is received back from each dollar spent by the state.

The basic formula for ROI is always calculated in the same manner, but the inputs used in the calculation can differ depending on the needs of the investor. Florida law requires the return to be measured from the state's perspective as the investor, in the form of state tax revenues.

**Overall Results and Conclusions**

Florida is home to 20 major military installations[5] and some of the largest defense contractors in the country. In Federal Fiscal Year 2023, federal spending on the state's defense contracts and payroll totaled over $32.2 billion.[6] Nationally, Florida is ranked 4th in the country in total defense spending.[7]

This analysis examines the economic impact of the defense industry in Florida, specifically the impact of Federal (DOD) contracts and grants on the state's economy. EDR found that those contracts and grants contributed an annual average of $28.5 billion to Florida's Real Gross Domestic Product (GDP) during the review period, producing more than $534 million in state tax revenues in FY 2021-22 alone. Federal defense spending was also responsible for an average of 47,644 jobs per year in Florida.

The analysis specifically reviewed the **Defense Infrastructure and Reinvestment Grants** associated with the goals of the Department of Commerce's Military Base Protection Program and the **Florida Defense Support Task Force grants.**[8] These grants fund activities and strategies intended to preserve and protect the U.S. military base presence throughout the state. Notably, these grants are not typical incentives but rather function to coordinate and fund investments designed to influence future decisions regarding federal military resource allocation in the state. As such, measuring the effectiveness of these grants is extremely difficult—as is calculating a return-on-investment as the state defines the term.

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[4] See the Methodology section for a description of the Statewide Model.

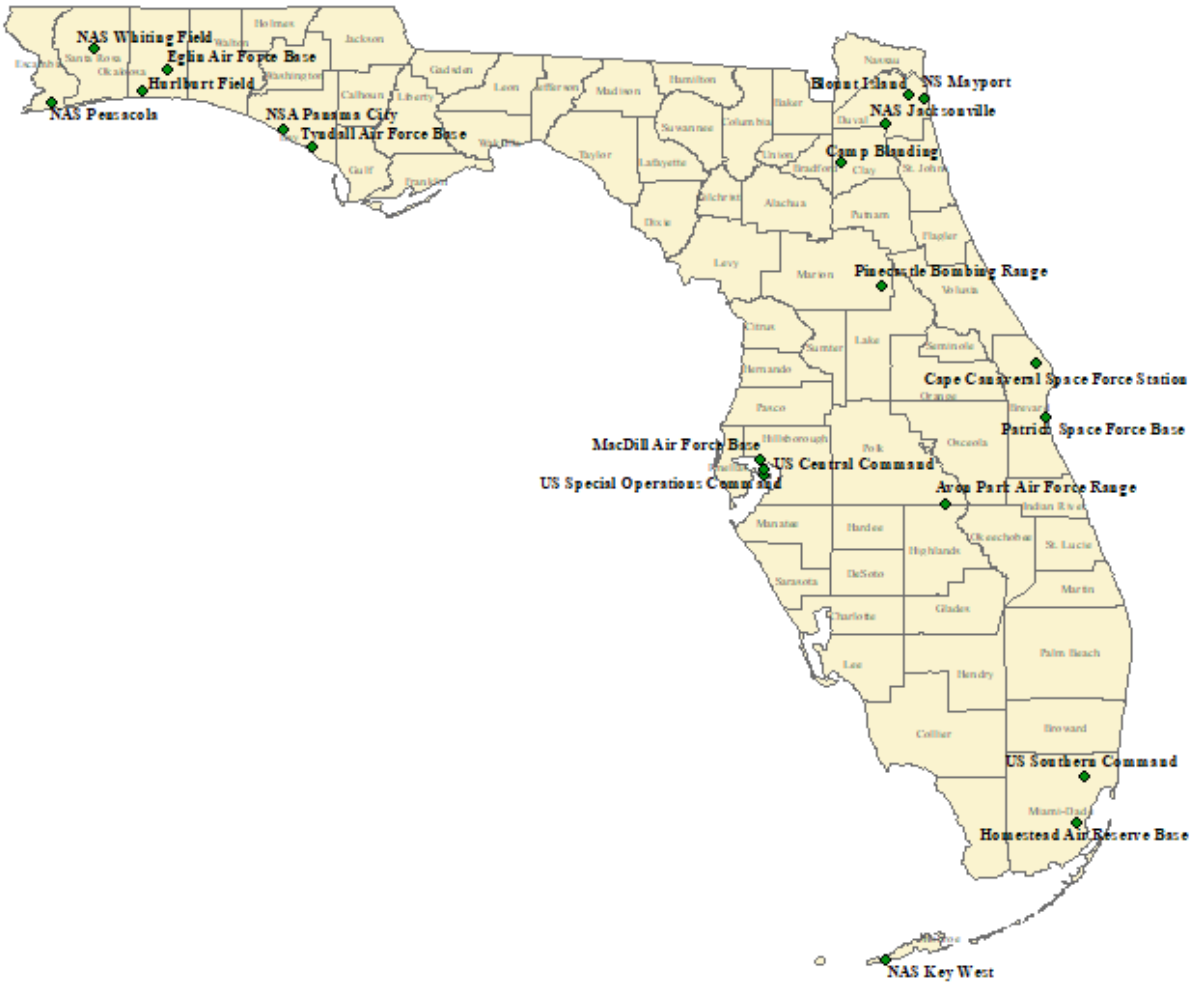
[5] See map on page 5. Also see https://selectflorida.org/wp-content/uploads/MD-Overview-Briefing.pdf.

[6] DOD Releases Report on Defense Spending by State in Fiscal Year 2023 - U.S. Department of Defense.

[7] *Ibid*.

[8] At the end of the review period, the Military Base Protection Grant Program had been unfunded since 2014.

## Florida's Major Military Installations



The public policy goal is to prevent any significant realignment or base closure from occurring in Florida; however, there has not been a Military Base Realignment and Closure (BRAC) process since 2005. Therefore, it is impossible to evaluate how well these programs have done to prevent a BRAC base contraction or closure in Florida.[9] In addition, no evidence was found in the academic literature to suggest that state-funded advocacy programs are effective in preventing BRAC base closures, or that the negative repercussions of a base closure are persistent over the long term.[10] As a result, a return-on-investment calculation was not possible for either of these grant programs given the conjectural nature of the underlying mission.

The appendix from the last report which discussed the future impact of climate change and sea level rise on Florida's military installations has been updated and revised. It now focuses on Florida's installations and contains the results from several new reports. Conceivably, these issues could prove to be a greater factor in potential base contraction or closure discussions than the size of Florida's grant programs.

The analysis separately reviewed the **Sales Tax Exemption for Machinery and Equipment Used in the Semiconductor, Defense, or Space Technology Production** (SDST). This tax break provides a full exemption from sales tax on the purchase of machinery and equipment used in the production processes of businesses meeting certain semiconductor, defense or space technology requirements, as well as building materials purchased for use in manufacturing or expanding clean rooms in semiconductor-manufacturing facilities.

The analysis does not include a return on investment for the SDST exemption because the size of the incentive is deemed too small to be of material consequence to the affected industries in Florida. This incentive is available to any business in Florida that is engaged in the production of semiconductors or defense and space technology products. There are no other requirements to obtain the exemption, and it is not contingent upon the "but for" criteria required in many of the state's economic development incentive programs. The SDST exemption cannot reasonably be deemed the primary or determining factor in the business' decision to purchase machinery and equipment. To remain competitive in the industry, these businesses need to maintain existing capacity or upgrade their machinery and equipment as technology changes or conditions otherwise warrant. Moreover, many businesses who have applied for and been granted these exemptions are federal contractors, and their machinery and equipment purchases are directly related to the federal contracts that they are awarded. The competitive advantage yielded by the amount of the forgone state taxes to any one business is unlikely to be a determining factor in the federal government's decision to award it a procurement contract. Finally, other state incentives exist that provide viable alternatives for at least some of the participants.

[9] Even if there were a BRAC process within or following the review period, it is unlikely that the "but for" test could reasonably be met for any of the grant programs because the scope and size of the grants makes it unlikely that they are the primary or determining factor in the federal government's decisions. Without the attestation that "but for" the state's investment the outcome would be different, there is no way to calculate the state's return.

[10] See EDR's conclusions in "Analysis of Florida's Defense Incentives, Including a Review of the Defense and Space Industries," Office of Economic and Demographic Research, 2018: 8-14, 19-20. Analysis of Florida's Defense Incentives, Including a Review of the Defense and Space Industries (state.fl.us)

# OVERVIEW OF FLORIDA'S DEFENSE INCENTIVES

Florida's defense incentives include those under the separate umbrellas of the Department of Commerce's Military Base Protection Program and the Florida Defense Support Task Force[11], as well as the Department of Revenue's Sales Tax Exemption for Machinery and Equipment Used in the Semiconductor, Defense, or Space Technology Production.[12] Each of these areas is described below.

## Grants Addressing Goals of the Military Base Protection Program

The Military Base Protection Program consists of activities and strategies intended to preserve and protect the U.S. military base presence throughout the state, and to mitigate the impact to the local economies should those bases be realigned or closed.[13] To accomplish these goals, the Department of Economic Opportunity in conjunction with Enterprise Florida, Inc., administered two active grant programs during the review period.[14] The Defense Infrastructure Grant Program (DIG) and the Defense Reinvestment Grant Program (DRG) received a combined appropriation of $7.8 million over the period of analysis. This funding was allocated as follows: $3 million for FY 2020-21, $2.4 million for FY 2021-22, and $2.4 million for FY 2022-23. By the end of the review period, an additional grant program (the **Military Base Protection Grant**) had been unfunded since 2014; one of its statutory purposes was to protect military installations against encroachment by securing non-conservation lands as a buffer.[15]

The impetus behind the Military Base Protection Program was the 1993 Base Realignment and Closure (BRAC) process that led to the loss of four Florida bases: the Naval Aviation Depot Pensacola, the Naval Aviation Station Cecil Field Jacksonville, the Naval Training Center Orlando, and the Homestead Air Force Base.[16] Over time, the Florida Legislature authorized various grant programs to support Florida's military installations and to help shield them from the adverse effects of future federal base realignment and closure actions.[17]

In 2004, the Legislature created the **Defense Infrastructure Grant Program** (DIG) to support local infrastructure projects deemed to have a positive impact on the military value of installations within the state.[18] Eligible projects include, but are not limited to, those related to encroachment, transportation and access, utilities, communications, housing, environment, and security. The projects must be

[11] Today, the Florida Defense Support Task Force is referred to as the Florida Defense Support Commission.
[12] For the most recent Association of Defense Communities' assessment of state-sponsored military support throughout the US, see "State of Support 2017: Highlights of State Support for Defense Installations." https://knowledge-online-defense-communities.knowledgeowl.com/help/state-of-support-2017.
[13] Section 288.980(1)(a), F.S.
[14] The Department of Economic Opportunity was renamed and restructured as the Department of Commerce by the 2023 Legislature. As part of this reorganization, many of the functions previously administered by Enterprise Florida were reassigned to the newly designated Department of Commerce. Also see Military Community Programs - FloridaJobs.org
[15] See page 15 of https://selectflorida.org/wp-content/uploads/MD-Overview-Briefing.pdf.
[16] See https://www.flsenate.gov/Session/Bill/2004/1604/Analyses/20041604SATD_2004s1604.atd.pdf. The Military Base Protection Grant Program was created in 1997, but a general framework of laws addressing base closure, disposition of military property, and reuse plans for closed bases preceded it. For an overview of the economic impact of military base closures across the US as well as Florida, see EDR's 2018 *"Analysis of Florida's Defense Incentives, Including a Review of the Defense and Space Industries,"* pp. 6-14. Analysis of Florida's Defense Incentives, Including a Review of the Defense and Space Industries (state.fl.us).
[17] To date, BRAC has had five rounds (1988, 1991, 1993, 1995 and 2005). There have been no new authorizations since 2005.
[18] Section 288.980(5), F.S.

located off-base if related to construction and benefit both the local community and the military installation. When funds are available, the Department of Commerce accepts requests from economic development applicants that officially represent a community or county in which a military installation is located.[19] There is no limit on the amount of the grant awarded to an applicant, but the designated government sponsor (county, municipality, special district, or state agency) must agree to maintain the project upon completion. By law, the local authority may be required to provide matching funds equal to 30% of the grant award.

The Department of Commerce reports that, in Fiscal Years 2020-21, 2021-22, and 2022-23, $2,477,888 in state payments were made for 15 grants to 9 recipients. These projects represented 47.6 percent of the original appropriations of $5,200,000 for DIG.

In 2012, the **Defense Reinvestment Grant Program** (DRG) was established to replace some of the earlier defense-related grant programs. The DRG's purpose is to help defense-dependent communities develop and implement strategies that would help the communities support the missions of military installations. The grant is also available to help transform the economy of a defense-dependent community into one that is more diversified. Eligible applicants include defense-dependent counties and cities, as well as local economic development councils located within such communities. By law, the local authority may be required to provide matching funds equal to 30% of the grant award.

The Department of Commerce reports that, in Fiscal Years 2020-21 through 2022-23, $2,103,566 in state payments were made for 28 grants to 14 recipients from a total appropriation of $2,600,000. These projects represented 80.9 percent of the original appropriations.

***Conclusion***

Given the conjectural nature of the underlying program's mission, a return-on-investment was not possible for either the Defense Infrastructure Grant Program or the Florida Defense Reinvestment Grant Program. Moreover, the Military Base Protection Grant was not active during the review period, so no state investments were made related to it. Instead, the Statewide Model was used to calculate the economic impact of the defense industry in Florida, specifically the impact of Federal (DOD) contracts and grants on the state. See the Program Findings section.

## Florida Defense Support Task Force Grants

In 2009, the Legislature created the Florida Council on Military Base and Mission Support. The Council was charged with providing oversight and direction for initiatives and actions to protect Florida's military bases from budget cuts or closures, including identifying opportunities to support and potentially grow the state's military installations. Somewhat overlapping in mission, the Legislature separately established the Florida Defense Support Task Force in 2011.[20] Arguably, its most unique function was to improve the state's military-friendly environment for service members, military dependents, military retirees, and businesses that bring military and base-related jobs to the state; otherwise, its responsibilities seemed to largely mirror the Council's functions. In 2012, the Legislature

[19] The Defense Infrastructure Grant (DIG) Program was not funded for FY 2025-26.

[20] The statutes were subsequently changed to require that it be a direct-support organization (Ch. 2024-234, Laws of Florida).

repealed the statutory provisions relating to the Florida Council on Military Base and Mission Support and transferred its duties to the Florida Defense Support Task Force.[21]

During the review period, the Task Force was authorized to use appropriated funds to award grants or contracts for: economic and product research and development; joint planning with host communities to accommodate military missions and prevent base encroachment; advocacy on the state's behalf to federal civilian and military officials; assistance to school districts in providing a smooth transition for large numbers of additional military-related students; job training and placement for military spouses in communities with large shares of active duty military personnel; and promotion of the state to military and related contractors and employers. Grants administered by the Task Force did not require matching funds, and there were no caps imposed. Grant applications had to be sponsored by a Task Force member, and the Task Force was responsible for deciding grant awards.

Funding for the Florida Defense Support Task Force remained consistent over the review period, with $2 million appropriated annually in the 2020-21, 2021-22, and 2022-23 fiscal years, for a total of $6 million. Task Force staff report that, in Fiscal Years 2020-21 through 2022-23, payments of $3,963,359 were made to 15 entities for 16 grants.

***Conclusion***

Given the recent restructuring of the Florida Defense Support Task Force and new restrictions on its capability to enter into contracts and grant agreements, a return-on-investment was not calculated.[22] Instead, the Statewide Model was used to calculate the economic impact of the defense industry in Florida, specifically the impact of Federal (DOD) contracts and grants on the state. See the Program Findings section.

## Sales Tax Exemption for Semiconductor, Defense, or Space Technology

The Sales Tax Exemption for Machinery and Equipment Used in the Semiconductor, Defense, or Space Technology Production (SDST) was first created in 1997.[23] When it was originally established, the exemption was limited to silicon technology production and research and development. In 2000, the law was amended to remove any reference to silicon technology, and to add semiconductor, defense, or space technology production and research and development to the exemption. In addition, certain building materials purchased for use in semiconductor-manufacturing facilities were exempted.[24] The exemption for research and development was transferred to a new subsection of the statute in 2006.[25]

This tax break provides a full exemption from sales tax on the purchase of machinery and equipment used in the production processes of businesses meeting certain semiconductor, defense or space

[21] Chapter 2012-98, L.O.F. See section 4 for the transfer language and section 5 for the repeal.

[22] For example, the statutes now state: "The direct-support organization is intended to complement but may not supplant the activities of other state entities." [Section 288.987(2)(c), F.S.] A February 2023 presentation (entitled *Florida's Support of Military and Defense*) indicated that the Florida Defense Support Task Force Grant Program "focuses on encroachment and defense support projects / studies." See https://selectflorida.org/wp-content/uploads/MD-Overview-Briefing.pdf.

[23] Section 212.08(5)(j), F.S.; s. 11, ch. 97-278, Laws of Florida.

[24] Section 10, ch. 2000-351, Laws of Florida.

[25] Section 2, ch. 2006-57, Laws of Florida.

technology requirements, as well as building materials purchased for use in manufacturing or expanding clean rooms in semiconductor-manufacturing facilities.

For the proposes of the exemption, "Semiconductor technology products" include:

> "…raw semiconductor wafers or semiconductor thin films that are transformed into semiconductor memory or logic wafers, including wafers containing mixed memory and logic circuits; related assembly and test operations; active-matrix flat panel displays; semiconductor chips; semiconductor lasers; optoelectronic elements; and related semiconductor technology products as determined by DEO."[26]

"Defense technology products" include:

> "…products that have a military application, including, but not limited to, weapons, weapons systems, guidance systems, surveillance systems, communications or information systems, munitions, aircraft, vessels, or boats, or components thereof, which are intended for military use and manufactured in performance of a contract with the United States Department of Defense or the military branch of a recognized foreign government or a subcontract which relates to matters of national defense."

"Space technology products" include:

> "…products that are specifically designed or manufactured for application in space activities, including, but not limited to, the components of space launch vehicles, space flight vehicles, missiles, satellites or research payloads, avionics, and associated control systems, and processing systems. The term does not include products that are designed or manufactured for general commercial aviation or other uses even though those products may also serve an incidental use in space applications."

"Clean rooms" means manufacturing facilities enclosed in a manner that meets the clean manufacturing requirements necessary for high-technology semiconductor-manufacturing environments. [27]

Today, initial applications for the SDST exemption are reviewed and certified by the Department of Commerce. The exemption certifications are then forwarded to the Department of Revenue, who issues the tax exemption certificate to the business. Businesses may request a renewal of the exemption every two years by submitting a letter to Department of Commerce, certifying under oath that there has been no material change in the conditions or circumstances entitling the business to the original certification. A business certified to receive this exemption may elect to designate one or more state universities or community colleges as recipients of up to 100 percent of the amount of the exemption for which they qualify.

The Department of Commerce reports that, during the review period, eighteen different companies anticipated using SDST exemptions. Out of 65 exemptions approved, 41 were in the defense industry, 10

[26] Select Florida - SDST tax exemption DEO is now the Department of Commerce.
[27] Section 212.08(5)(j)7. F.S.

were in the space industry and 14 were in the semi-conductor industry. The total value of the tax exemptions was estimated to be $38.3 million.[28]

| Total Tax Exemption by Fiscal Year | | | |
|---|---|---|---|
| FY 2020-21 | FY 2021-22 | FY 2022-23 | Total |
| $ 13,348,895 | $ 14,209,382 | $ 10,763,270 | $ 38,321,547 |

Unquestionably, the primary beneficiaries of the SDST exemption are businesses involved in the production of defense technology products. Defense technology facilities accounted for $22.3 million or 58.2 percent of all taxes exempted. Semiconductor facilities and Space accounted for approximately $1.9 million and $14.1 million, respectively. This corresponds to 5 percent and 36.9 percent of the total taxes exempted, respectively.

Generally, data quality is better than several of the other economic development incentives, but there are still questions. Renewal applicants are required to submit the value of any tax-exempt purchase during the two calendar years prior to requesting the renewal. Given that not all businesses are required to report every year and not all businesses renew every two years, there are years when a business may not report any purchases to the Department of Commerce. This results in gaps in actual purchases which can be inferred by looking at the annual totals of taxes exempted.

***Conclusion***

A return-on-investment was not calculated for this sales tax exemption, primarily because the exemption's size is not deemed to be material to the final purchasing and investment decisions. Other objectives and competitive factors (such as the need to stay on top of technological advances) are much more likely to be bigger drivers for those decisions.

[28] The Department of Commerce's reported value of tax exemptions on an annual basis is much higher than the projected values from the Department of Revenue used in the 2024 Florida Tax Handbook. The Handbook contained estimates for FY 2025-26 of $0.2 million for clean rooms and $4.1 million for the machinery and equipment. Based on the data, these figures are too low.

# METHODOLOGY

**Statewide Model**

EDR used the Statewide Model to simulate the economic impact of federal contracts and grants to the defense industry in Florida. The Statewide Model is a dynamic computable general equilibrium (CGE) model that simulates Florida's economy and government finances.[29] The Statewide Model is enhanced and adjusted each year to reliably and accurately model Florida's economy. These enhancements include updating the base year the model uses, as well as adjustments to how the model estimates tax collections and distributions.[30]

Among other things, the Statewide Model captures the indirect and induced economic activity associated with the defense industry in Florida. This is accomplished by using large amounts of data specific to the Florida economy and fiscal structure. Mathematical equations[31] are used to account for the relationships (linkages and interactions) between the various economic agents, as well as likely responses by businesses and households to changes in the economy.[32] The model also has the ability to estimate the impact of economic changes on state revenue collections and state expenditures in order to maintain a balanced budget by fiscal year.

When using the Statewide Model to evaluate the defense industry in Florida, the model is shocked[33] using static analysis to develop the initial or direct effects attributable to defense contracts and grants. In this analysis, the annual direct effects (shocks) of defense contracts and grants took the form of:

- Removal of spending associated with Federal (DOD) Contracts and Grants at the Florida industry level; and
- Removal of spending associated with the military base procurement contracts and grants.

After the direct effects are developed and estimated, the model is then used to estimate the additional—indirect and induced—economic effects generated by the defense contracts and grants. This includes the supply-side responses to defense industry activity, where the supply-side responses are changes in investment and the demand for labor arising from that activity. Indirect effects are the changes in employment, income, and output by local supplier industries that provide goods and services to support the direct economic activity. Induced effects are the changes in spending by households whose income is affected by the direct and indirect activity.

All of these effects can be measured by changes (relative to the baseline) in the following outcomes:

- State government revenues and expenditures

[29] The statewide economic model was developed using GEMPACK software with the assistance of the Centre of Policy Studies (CoPS) at Victoria University (Melbourne, Australia).

[30] Reports prior to January 1, 2017 have used 2009 as the base year. Reports as of January 1, 2025 have used FY 2018-19 as the base year.

[31] These equations represent the behavioral responses to economic stimuli – to changes in economic variables.

[32] The business reactions simulate the supply-side responses to the new activity (e.g., changes in investment and labor demand).

[33] In economics, a shock typically refers to an unexpected or unpredictable event that affects the economy, either positively or negatively. In this regard, a shock refers to some action that affects the current equilibrium or baseline path of the economy. It can be something that affects demand, such as a shift in the export demand equation, or it could be something that affects the price of a commodity or factor of production, such as a change in tax rates.

- Jobs
- Personal income
- Florida Gross Domestic Product
- Gross output
- Household consumption
- Investment
- Population

EDR's calculation of the financial value of contracts and grants related to Florida's defense industry is used to model the impact on state revenues and expenditures. Other measures for this analysis include the number of jobs created, the increase or decrease in personal income, and the impact on gross domestic product, all of which are included in the model results.[34]

[34] For an overview of issues that shape EDR's Analysis of Economic Development Incentive Programs and Calculation of Return on Investment, See Appendix One, "Economic Evaluation for Select State Economic Development Incentive Programs," Office of Economic & Demographic Research, November 2021.
http://edr.state.fl.us/Content/returnoninvestment/ROISELECTPROGRAMS2020final_Revised%2011-29-21.pdf

# KEY ASSUMPTIONS

The following key assumptions are used in the Statewide Model to determine the impact of the defense industry in Florida. Some of the assumptions are used to resolve ambiguities in the literature, while others conform to the protocols and procedures adopted for the Statewide Model.

1. The analysis assumes the data used to estimate defense industry spending is accurate and a reasonable approximation when used to simulate related economic activity. The data comes from USASpending.gov, which is the official source for U.S. Government contracts. The data was not independently audited or verified by EDR.

2. The analysis assumes, given the time span under review, applying discount rates would not prove material to the outcome.

3. The analysis assumes the relevant geographic region is the whole state, not individual counties or regions. The model takes account of and makes adjustments for the fact that industries within the state cannot supply all of the goods, services, capital, and labor needed to produce the state's output.

# KEY TERMS

Key terms used in the following table are described below:

Total Net State Revenues $ (M) – Represents the amount of state revenue generated by the activity in each fiscal year.

Personal Income (Nominal $(M)) – Reflects income received by persons from all sources. It includes income received from participation in production as well as from government and business transfer payments. It is the sum of compensation of employees (received), supplements to wages and salaries, proprietors' income with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj), rental income of persons with CCAdj, personal income receipts on assets, and personal current transfer receipts, less contributions for government social insurance.

Real Disposable Personal Income (Fixed 2018-19 $(M)) – Reflects total after-tax income received by persons; it is the income available to persons for spending or saving.

Real Gross Domestic Product (Fixed 2018-19 $(M)) – Measures the state's output; it is the sum of value added from all industries in the state. GDP by state is the state counterpart to the Nation's gross domestic product.

Consumption by Households and Government (Fixed 2018-19 $(M)) – Reflects the goods and services purchased by persons plus expenditures by governments consisting of compensation of general government employees, consumption of fixed capital (CFC), and intermediate purchases of goods and services less sales to other sectors and own-account production of structures and software. It excludes current transactions of government enterprises, interest paid or received by government, and subsidies.

Real Output (Fixed 2018-19 $(M)) – Consists of sales, or receipts, and other operating income, plus commodity taxes and changes in inventories.

Total Employment (Jobs) – Provides estimates of the number of jobs, full time plus part time, by place of work. Full time and part time jobs are counted at equal weight. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are not included.

Population (Persons) – Reflects first of year estimates of people, including survivors from the previous year, births, special populations, and three types of migrants (economic, international, and retired).

# PROGRAM FINDINGS

Florida is home to 20 military installations and some of the largest defense contractors in the country. In Federal Fiscal Year 2022-23, total defense spending on contract obligations and payroll spending amounted to over $32.2 billion.[35] Nationally, Florida is ranked 4th in the country in total defense spending.[36]

The analysis examines the economic impact of the defense industry in Florida, specifically the impact of Federal (DOD) contracts and grants to industries in the state. The results are shown as positive additions to the economy rather than the negative counterfactual.

**Statewide Economic Model Impact Projections of the Removal of Defense Spending**

| | | FY2020 | FY2021 | FY2022 | Total | | Average per Year |
|---|---|---|---|---|---|---|---|
| Personal Income | Nominal $ (M) | 18,728.38 | 22,653.25 | 27,726.63 | 69,108.25 | | 23,036.08 |
| Real Disposable Personal Income | Fixed 2018-19 $ (M) | 16,466.07 | 19,292.73 | 22,147.68 | 57,906.48 | | 19,302.16 |
| Real Gross Domestic Product | Fixed 2018-19 $ (M) | 26,625.91 | 28,304.79 | 30,527.10 | 85,457.80 | | 28,485.93 |
| Consumption by Households and Government | Fixed 2018-19 $ (M) | 28,704.02 | 29,815.03 | 31,498.91 | 90,017.97 | | 30,005.99 |
| Real Output | Fixed 2018-19 $ (M) | 30,191.12 | 31,640.15 | 33,355.07 | 95,186.34 | | 31,728.78 |
| Total State Revenues | Nominal $ (M) | 399.61 | 453.21 | 534.25 | 1,387.07 | | 462.36 |

| | | FY2020 | FY2021 | FY2022 | Minimum | Maximum | Average per Year |
|---|---|---|---|---|---|---|---|
| Total Employment | Jobs | 57,054 | 46,119 | 39,759 | 39,759 | 57,054 | 47,644 |
| Population | Persons | 0 | 11,296 | 23,168 | 0 | 23,168 | 11,488 |

In terms of annual averages during the review period, the Department of Defense contracts contributed nearly $28.5 billion to Florida's Real Gross Domestic Product, $19.3 billion in real Disposable Personal Income, and $462.36 million in state revenue per year. These contracts amounted to about 0.916 percent of Florida's total GDP and 0.915 percent of Florida's total real Disposable Personal Income. Additionally, defense spending on Florida contracts was responsible for an estimated 47,644 jobs annually.

Essentially treated as helicopter drops of federal spending, the defense contracts benefit Florida through both the volume and value of contracts to Florida-based companies. Within the review period, this amounted to over $46.5 billion worth of contracts. This contracted level is significantly higher than the amount analyzed in the previous reports ($39.8 billion in 2021 and $30.0 billion in 2018).

Additionally, Florida's economy benefited through the concentration of defense contracts in aerospace manufacturing. Aerospace manufacturing firms have larger economic multipliers than the average Florida company. Larger economic multipliers means more indirect and induced economic impacts in Florida from every dollar received through aerospace manufacturing contracts.

[35] DOD Releases Report on Defense Spending by State in Fiscal Year 2023 - U.S. Department of Defense.
[36] *Ibid*.

# APPENDIX – Update to 2022 Appendix on Climate Change, Sea Level Rise and Florida's Military Installations[37]

**Introduction**

The U.S. Government Accountability Office (GAO) has released a large number of reports evaluating the Department of Defense's efforts to protect its installations against damage from the changing climate and extreme weather events.[38] Although wide-ranging in scope, these efforts include collaboration with surrounding communities. One of the initial reports summarized the early years as follows: "Since 2010, DOD has acknowledged climate change and extreme weather as a threat to its installations and operations, and in January 2016 issued guidance noting the importance of engaging with state and local governments to improve climate change preparedness and resilience.[39] Similarly, U.S. Defense Secretary Lloyd Austin wrote in a September 2024 departmental report:

> "Over the past decade alone, extreme weather has significantly disrupted military readiness and driven tens of billions of dollars in damage and recovery costs across DOD. These extreme weather events, typical of those fueled by climate change, also impact training, testing, equipment availability, and infrastructure and thus compromise DOD's ability to execute its mission."[40]

The U.S. Department of Defense (DoD) has physical assets located throughout the world, including ownership of 157,129 buildings (1,638,862,108 square feet) and 8.28 million acres of land.[41] The dual threats from extreme weather events and changing climate conditions have wide-ranging near and long-term impacts on these assets, making adaptation to enhance resilience an important consideration to the nation's overall system of defense. Among other things, this includes hardening critical infrastructure against the reality of degrading installations, infrastructure, and systems. Again, according to the 2024 report, "...DOD must adapt the built and natural infrastructure on our installations to ensure their continued readiness to serve as the platforms from which DOD trains, organizes, equips, cares for, and sustains forces and their families."[42]

This Appendix briefly discusses recent reports that assess the risks to U.S. military installations but only highlights those that include references to facilities in Florida. The material is presented in date order, with the earlier reports reviewed first.

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[37] See https://edr.state.fl.us/Content/returnoninvestment/DefenseIncentivesandIndustry.pdf.

[38] The U.S. Department of Defense has recently been renamed as the U.S. Department of War; however, the Department of Defense or DoD is used throughout the appendix for ease of understanding since all of the referenced reports and quotes used the prior name.

[39] See: Climate Resilience: DOD Coordinates with Communities, but Needs to Assess the Performance of Related Grant Programs (GAO-21-46). Published: Dec 10, 2020. Publicly Released: Dec 10, 2020.

[40] See: Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2024. Department of Defense 2024-2027 Climate Adaptation Plan. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 5 September 2024. Specifically mentioned is $3.7 billion to rebuild Tyndall Air Force Base, Florida, after Hurricane Michael in 2018. This was the highest dollar amount among the examples.

[41] *Ibid.* Inventory snapshot dated September 30, 2022.

[42] *Ibid.*

**Assessments of Risk to Specific Military Installations**

In 2013 the DoD's Strategic Environmental Research and Development Program (SERDP) released its first report summarizing federal agency initiatives to address the impact of climate change on federal assets. The SERDP also reported on four "research projects that are developing and testing the information, models, and tools needed to examine climate change impacts on coastal installations." The four installations included Eglin Air Force Base in Florida. From these projects, SERDP developed the policy context and technical considerations for "… the planning, design, and operations of military facilities, as well as into the strategic infrastructure decisions facing the Military Services and DoD as a whole."[43]

In 2016, the U.S. Union of Concerned Scientists (USC) performed an analysis of the potential impact of sea level rise on eighteen military installations of significance along the East and Gulf coasts. The installations include, by state:

- Maine: Portsmouth Naval Shipyard
- New Jersey: US Coast Guard Station Sandy Hook
- Maryland: US Naval Academy
- Washington, DC: Joint Base Anacostia-Bolling and Washington Navy Yard
- Virginia: Joint Base Langley-Eustis | Naval Air Station Oceana Dam Neck Annex | Naval Station Norfolk[44]
- North Carolina: Marine Corps Base Camp Lejeune
- South Carolina: Marine Corps Recruit Depot Parris Island[45] and Marine Corps Air Station Beaufort
- Georgia: Hunter Army Airfield | Naval Submarine Base Kings Bay
- Florida: Naval Air Station Key West | Naval Station Mayport | Eglin Air Force Base

The analysis found that "… these sites are at risk for more frequent and extensive tidal flooding; land loss as some installation areas are permanently inundated and others flood with daily high tides; and deeper and more extensive flooding due to storm surge."[46] Further, sixteen of the 18 installations:

> "…could have tidal flooding 100 times each year by midcentury with a moderate rate of sea level rise. By the end of this century, nine installations could lose one-quarter or more of their land area, including currently utilized areas, with a moderate rate of increase and half of their land or more with a faster rate. In that faster-rate scenario, four military installations would lose between 75 and 95 percent of their land area this century."[47]

These four referenced installations included Naval Air Station Key West. In both the moderate and faster-rate scenarios, Naval Air Station Key West was the installation most at risk for land loss due to daily flooding. Naval Station Mayport ranked toward the middle, and Eglin Air Force Base ranked at the bottom of the 18 ranked installations.

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[43] Strategic Environmental Research and Development Program, "Assessing Impacts of Climate Change on Coastal Military Installations: Policy Implications." US Department of Defense. 2013: ES-1. Assessing Impacts of Climate Change on Coastal Military Installations: (climateandsecurity.org)

[44] *See* Dave Lindorff, "The US Navy Has a Water Problem," *The Nation*. September 19, 2019. The US Navy Has a Water Problem | The Nation

[45] *See* Froeba, Kristine, "Parris Island in Peril: Rising Sea Levels Threaten Historic Marine Base," *Marine Corp Times*, February 3, 2021. Parris Island in peril: Rising sea levels threaten historic Marine base (marinecorpstimes.com)

[46] Spanger-Siegfried, Erika, Kristina Dahl, Astrid Caldas, and Shana Udvardy, "The US Military on the Front Lines of Rising Seas: Growing Exposure to Coastal Flooding at East and Gulf Coast Military Bases. Union of Concerned Scientists. 2016:2.

[47] *Ibid.*

In response to the Fiscal Year 2018 National Defense Authorization Act, the DoD issued an "…assessment of the significant vulnerabilities from climate-related events in order to identify high risks to mission effectiveness on installations and to operations."[48] The Department characterized its review (first published in January 2019) as "a high-level assessment" of the threats to seventy-nine installations. Each of these was deemed to be a mission assurance priority installation based on its operational role.

The assessment determined that each installation could be subject to multiple climate-related threats. Further, additional bases may be vulnerable to these threats 20 years in the future, and "… vulnerability analyses to mid- and late-century would likely reveal an uptick in vulnerabilities (if adaptation strategies are not implemented)."[49] As for installations in Florida, the U.S. Southern Command Headquarters-Miami was vulnerable to recurrent flooding and wildfires, as were Cape Canaveral and MacDill Air Force Bases. Eglin and Patrick Air Force Bases were vulnerable to recurrent flooding, drought and wildfires, while Naval Air Station Key West was vulnerable to recurrent flooding and drought.[50] The report notes that: "The Military Services and the Defense Logistics Agency approach installation resiliency through the integration of weather and climate considerations into existing plans and processes, using partnerships with other federal agencies, state governments, local governments, nongovernmental organizations, and local communities to increase preparedness and resilience."

In June 2019, the DoD released a reconfigured list of the installations most threatened by climate change.[51] Six Florida bases ranked in the 10 most vulnerable Air Force Bases: Eglin, Hurlburt Field, Patrick[52], Homestead, MacDill, and Tyndall. Naval Air Station Key West was included in the 16 most vulnerable Navy bases (unranked).

Also in June 2019, the General Accounting Office (GAO) released its report assessing "… DoD's progress in developing a means to account for potentially damaging weather in its facilities project designs." One of the examples of the real vulnerability faced by military facilities was from Florida: "...in October 2018, Hurricane Michael devastated Tyndall Air Force Base in Florida, shutting down most base operations until December; causing severe damage to the flight line, drone runway, and other base facilities including family housing; and destroying the base's marina."[53] The report favorably singled out Eglin Air Force Base for its planning efforts to mitigate identified risks, but unfavorably noted the planning efforts by Naval Air Station Key West, saying:

> "...Naval Air Station Key West, Florida, included discussion of the effects of sea level rise and storm surge on the installation in its master plan, as well as steps it could take to mitigate these effects. However, although the installation experienced drought conditions rated severe in 2011 and extreme in 2015, its master plan does not discuss effects on the installation of drought, which, according to a DOD report to Congress, can pose significant risks to an installation, including implications for base infrastructure."

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[48] Department of Defense, "Report on Effects of a Changing Climate to the Department of Defense." 2019:2. CLIMATE-CHANGE-REPORT-2019.PDF ov(defense.gov)

[49] *Ibid*, 17.

[50] *Ibid*, Appendix. Also see Gunn, Lee, "MacDill Air Force Base's security is threatened by climate change," Guest Column, *Tampa Bay Times*, May 16, 2021. MacDill Air Force Base's security is threatened by climate change | Column (tampabay.com). Note that Patrick Air Force Base is now Patrick Space Force Base.

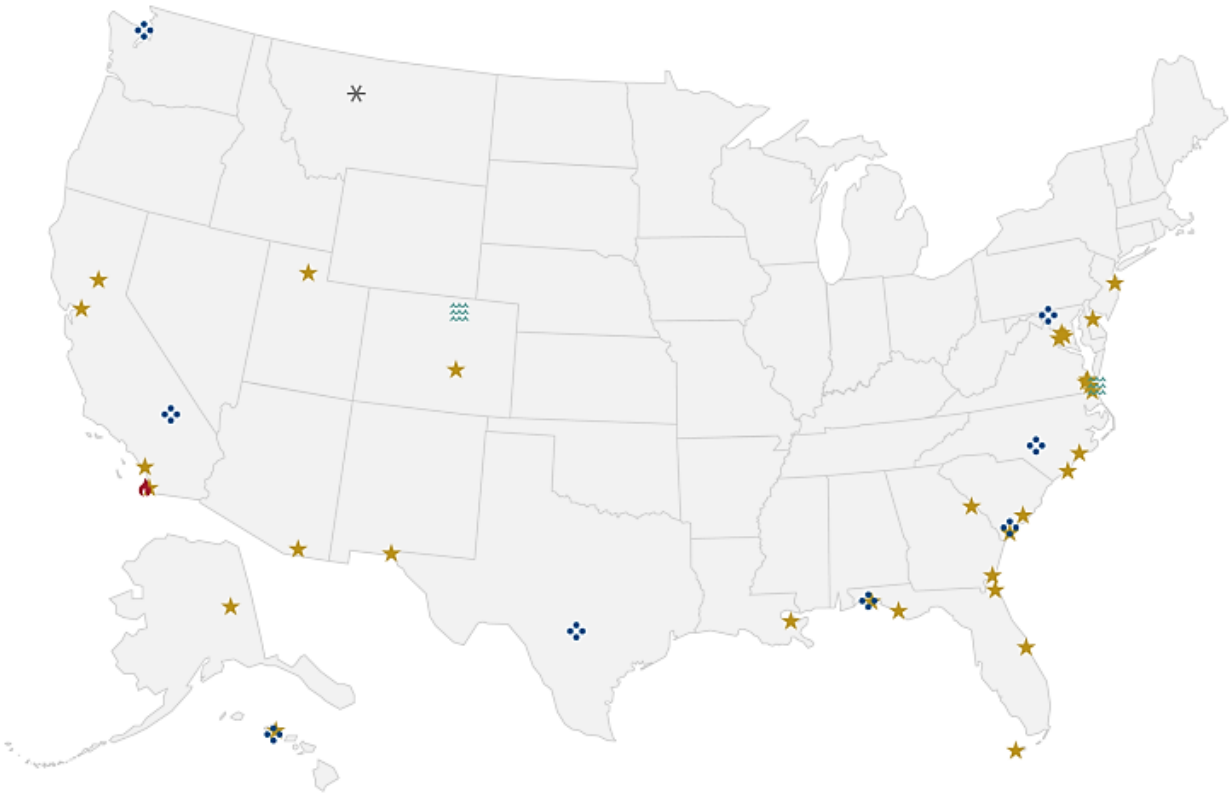
[51] Watson, Ben and Patrick Tucker, "These Are the US Military Bases Most Threatened by Climate Change," *Defense One*, June 12, 2019. These Are the US Military Bases Most Threatened by Climate Change - Defense One

[52] Patrick Air Force Base is now Patrick Space Force Base.

[53] See: https://www.gao.gov/assets/gao-19-453.pdf. See also: Congressional Research Service, In Focus, April 6, 2023, *Climate Change and Adaptation: Department of Defense*.

In December 2020, the General Accounting Office (GAO) released a report that included results from an in-depth survey to 65 installations, almost all of which were identified by DoD as having "significant vulnerabilities to the effects of climate change and extreme weather, and installations that the military services report as being most vulnerable to those effects."[54] In all, Florida had 8 of the requested participants in the study: Naval Air Station Key West, Eglin Air Force Base, Homestead Air Force Base, Hurlburt Field, MacDill Air Force Base, Patrick Air Force Base[55], Tyndall Air Force Base, and Marine Corps Support Facility Blount Island. A key part of the study evaluated the degree to which the respective installations relied on the physical infrastructure, commodities, and services of surrounding communities to support installation operations, as well as the effects on those operations in the event of disruptions caused by climate change and extreme weather events. Near the upper end of the response range, Elgin Air Force Base indicated that it relied on surrounding communities for all but two of the 18 named infrastructure and support services. Illustrative of the key findings, the following maps are pulled directly from that report. The first (GAO Figure 5) is based on results from actual events in the past, and the second (GAO Figure 6) is based on projections for the future.

**Figure 5: Locations of Surveyed Installations Reporting Disruptions in the Supply of Community Infrastructure or Support Services Due to Climate Change or Extreme Weather, by Event, Fiscal Years 2014 through 2019**



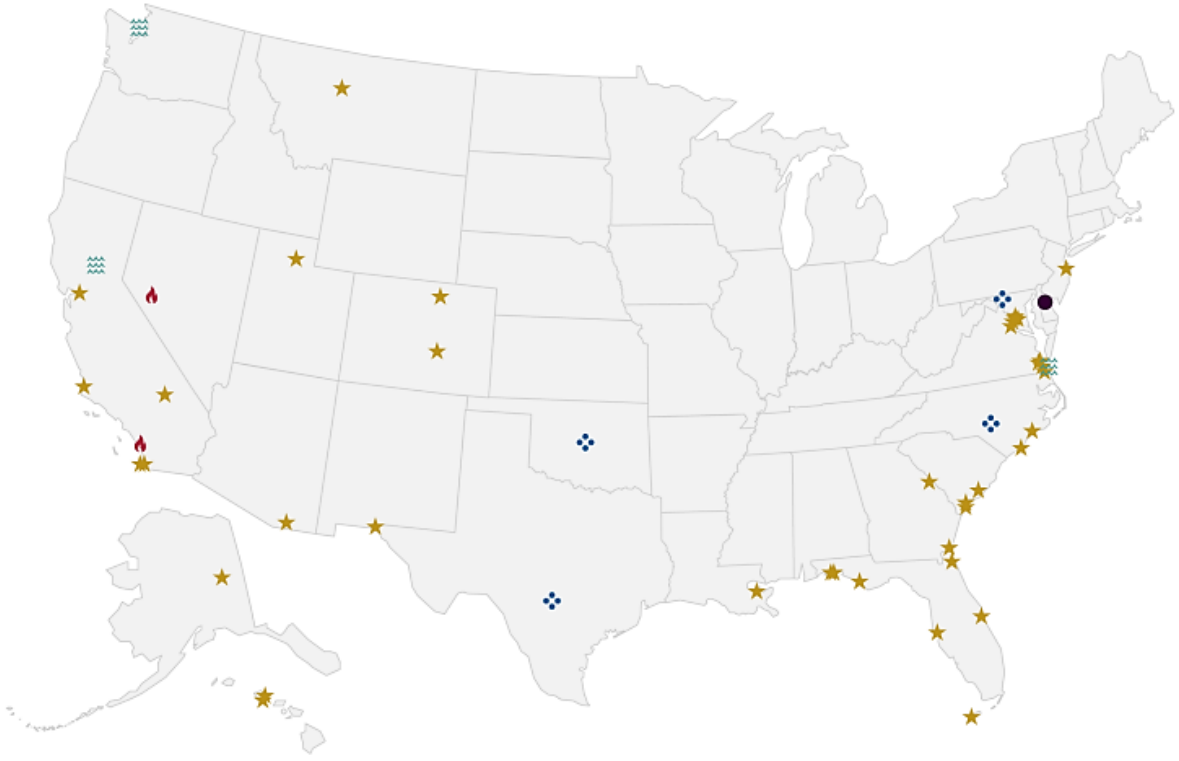

Source: GAO analysis of GAO survey of 65 Department of Defense installations. | GAO-21-46

Note: Multiple threats includes any combination of desertification, drought, extreme cold, extreme heat, extreme precipitation, recurrent flooding, thawing permafrost, or wildfire.

[54] See: Climate Resilience: DOD Coordinates with Communities, but Needs to Assess the Performance of Related Grant Programs (GAO-21-46). Published: Dec 10, 2020. Publicly Released: Dec 10, 2020.

[55] Patrick Air Force Base is now Patrick Space Force Base.

**Figure 6: Locations of Surveyed Installations Reporting Projected Disruptions to Community Infrastructure or Support Services Due to Climate Change or Extreme Weather, by Event, Fiscal Years 2020 through 2039**




Source: GAO analysis of GAO survey of 65 Department of Defense installations. | GAO-21-46

Note: Multiple threats includes any combination of desertification, drought, extreme cold, extreme heat, extreme precipitation, recurrent flooding, thawing permafrost, or wildfire.

A special Bloomberg Law analysis in September 2023 included Eglin Air Force Base as one of the top 10 facilities at risk from flooding related to sea level rise. Kennedy Space Center was ranked #12; the Naval Air Station Jacksonville, MacDill Air Force Base, and Naval Air Station Pensacola were ranked #25, #26 and #27, respectively.

In 2024, the Department of Defense's Climate Adaptation Plan profiled several Florida projects. For nature-based solutions (NBS), the report included the following:

> **"Air Force:** Tyndall Air Force Base has several NBS pilot projects, including a living shoreline, oyster reefs, and saltwater marsh enhancement to reduce erosion and mitigate wave energy, and coastal dune restoration using sand accretion processes. MacDill Air Force Base created oyster reefs off the coastline to counteract rapid erosion near the vulnerable West Indian manatee critical habitat and several important Native American burial sites. The oyster reefs also help safeguard the nearby commercial shipping lane. The NBS projects depend upon a range of stakeholders from within the DOD, local, state and federal agencies, conservation organizations, and academia."[56]

[56] Department of Defense, Office of the Undersecretary of Defense (Acquisition and Sustainment). 2024. Department of Defense 2024-2027 Climate Adaptation Plan. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 5 September 2024. An earlier report (January 2019) also included a partial reference to this project: "Eglin and MacDill Air Force

According to a February 2026 analysis by the U.S. Government Accountability Office, Hurricane Michael caused at least $4.5 billion in damage to the Tyndall Air Force Base when it struck and "damaged hundreds of buildings and created over 700,000 cubic yards of debris."[57] Further:

> "In October 2018, category 5 Hurricane Michael made landfall near Tyndall Air Force Base and was utterly catastrophic, according to the Air Force. Installation officials stated that the hurricane's high-speed winds and storm surge flooding damaged all facilities on the base, of which about 60 percent were damaged beyond repair. As a result of this damage, over 11,000 service members and their families were temporarily displaced. In addition, officials stated the Air Force shifted its F-22 training mission from Tyndall Air Force Base to Joint Base Langley-Eustis, though Tyndall was later selected as the home and training location for the F-35 mission of the 325th Fighter Wing."[58]

The rebuilding effort for this facility significantly improved resiliency, making it more likely that the facility will withstand future severe weather events.[59] Again according to the 2026 GAO Report:

> "As part of the planning for the recovery at Tyndall, the Air Force issued memoranda to establish design flood elevation and design wind speed requirements specifically for Tyndall. These memoranda are intended to ensure the rebuilt infrastructure and facilities will be more resilient for future severe weather events. The design wind speed guidance, taken from Florida's High Velocity Hurricane Zone standards, also specifies best practices for selecting building envelope materials (e.g., roofing, windows) that are capable of withstanding future category 5 hurricanes. According to installation officials, the installation also implemented design elements such as watertight facilities and breakaway walls to mitigate damage from future flooding."[60]

**Conclusion**

Florida is home to twenty installations, many of which are of military significance, most of which are on or near the coast. Consequently, they are vulnerable to sea level rise as well as other risks related to a changing climate. Recent weather events have exposed these vulnerabilities. Two recent events stand

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Bases in Florida partnered with local groups to address persistent coastal erosion around their installations. Oyster shells collected from local restaurants became the foundation for oyster reefs to create a living shoreline, bolstering natural protection of critical historic sites, stabilizing shoreline, protecting the riparian and intertidal environment, thereby creating habitat for aquatic/terrestrial species." See: https://media.defense.gov/2019/Jan/29/2002084200/-1/-1/1/CLIMATE-CHANGE-REPORT-2019.PDF.

[57] Government Accountability Office. (2026). MILITARY INSTALLATIONS: DOD Should Improve Natural Disaster Cost Tracking and Planning for Resilience Improvements. (GAO Publication No. 26-107786). Washington, D.C.: U.S. Government Printing Office. See: https://www.gao.gov/assets/gao-26-107786.pdf.

[58] *Ibid.*

[59] The DoD's 2021 Climate Adaptation Plan noted that:

> "The Department of the Air Force exceeded Unified Facilities Criteria minimum design requirements in rebuilding Tyndall AFB following Hurricane Michael. The design wind speed used for rebuild is based on the Florida Building Code for High Velocity Hurricane Zone (165 mph), because maximum wind during Hurricane Michael was 161 mph. Other High Velocity Hurricane Zone requirements were adopted, such as roof framing to foundation connections. Design flood elevation merged Federal Emergency Management Agency base flood levels and the highest DOD regionalized sea level rise scenario for year 2100." (p. 11)

[60] Government Accountability Office. (2026). MILITARY INSTALLATIONS: DOD Should Improve Natural Disaster Cost Tracking and Planning for Resilience Improvements. (GAO Publication No. 26-107786). Washington, D.C.: U.S. Government Printing Office. See: https://www.gao.gov/assets/gao-26-107786.pdf.

out. In 2020, Pensacola Naval Air Station incurred extensive damage from Hurricane Sally, requiring repair and rebuilding of some facilities.[61] In October 2018, Tyndall Air Force Base was decimated by Hurricane Michael, the first Category 5 hurricane on record to make landfall in Northwest Florida.

Looking to the future, the home of Naval Air Station Key West (Monroe County) is attempting to plan for a 17-inch rise in sea level by 2040.[62] Over the long term, it is doubtful that the base would remain strategically and economically viable in this projected scenario. Other Florida facilities have also identified expected future impacts from a number of different threats.

The weight of these past events and future projections has potential implications for Florida's installations. These implications have come with a warning. Notably, a Congressional Research Service Report from April 2023 indicated, "Congress may consider the methods and results of these [exposure] assessments as it evaluates military construction funding requests or possible future base realignment and closure processes."[63] Targeted partnerships with the surrounding communities and the state may prove to be invaluable to warding off any adverse outcomes.

[61] In 2004, the station sustained serious damage from Hurricane Ivan, resulting in its closure for nearly a year.

[62] See Milman, Oliver, "The Water is Coming: Florida Keys faces stark reality as Seas Rise." *The Guardian*, June 23, 2021. 'The water is coming': Florida Keys faces stark reality as seas rise | Florida | The Guardian
The rise in sea level is based on NOAA and IPCC projections, respectively, relative to mean sea level in 2000, as reported in "Unified Sea Level Rise Projection Southeast Florida," prepared by the Southeast Florida Regional Climate Change Compact's Sea Level Rise Ad Hoc Work Group. 2020: 10. Sea-Level-Rise-Projection-Guidance-Report_FINAL_02212020.pdf (southeastfloridaclimatecompact.org).
*Also see* "The 3rd National Risk Assessment: Infrastructure on the Brink." First Street Foundation, October 2021: 41-43. The 3rd National Risk Assessment: Infrastructure on the Brink | PreventionWeb

[63] Congressional Research Service, In Focus, April 6, 2023, Climate Change and Adaptation: Department of Defense.