CLIMATE ALLIES:
How urban/military interdependence enables adaptation

By

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Submitted to the Department of Urban Studies and Planning in partial fulfillment of the requirements for the degree of

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ABSTRACT
As climate impacts escalate, U.S. cities and regions have attempted to fill the federal
leadership vacuum in spite of their own resource constraints. In the midst of federal
inertia, the Department of Defense (DoD) acknowledges climate risk, mainstreaming it
into policy, while defense experts promote a climate security agenda. However, defense
adaptation has been modest. Installations and the communities around them remain
vulnerable, but these shared risks surface the potential for joint adaptation planning.
Through a relational case study of two regions with large defense complexes and the
climate security policy community in DC, I ask: how and why do municipal and military
leaders undertake joint adaptation? What impact does this have on commonly understood
barriers to adaptation? How does climate security discourse shape urban/military
collaboration?

I find that in Hampton Roads, Virginia and San Diego, California, urban leaders are
leveraging the military presence to reinforce their own adaptation efforts and elevate a
broader adaptation agenda. This alliance operates through two mutually reinforcing
enablers: recognizing interdependence and constructing credibility. As climate impacts
compromise infrastructural and social networks, urban and military stakeholders have
adopted interdependence as an operating premise, explicitly rejecting military islanding.
This challenges expectations in critical adaptation studies of the rise of ecological
enclaves while more broadly challenging critiques of urban securitization. Further, it
complicates notions of defense-dependency, as the military contingent increasingly
recognizes reliance on the community. Amidst the politics of doubt, the military serves as
a “credible messenger” on an institutional and individual level; climate security
advocates work strategically, deploying this authority to build support for climate action.

Both enablers reinforce the centrality of effective framing and multilevel coordination to
urban adaptation. Benefits include expanded cooperation, increased technical capacity,
and access to resources; pitfalls include favoring adaptation over mitigation and
prioritizing conspicuous over mundane climate risks. Urban leaders’ qualified success in
leveraging the military for adaptation suggests implications for other powerful
institutions. Conceptualizing military installations as anchor institutions with an
embedded local presence and dedicated mission highlights pathways for communities to
form additional adaptation alliances.

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for making it possible
and
Petra
for putting it in perspective
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CH. 1 INTRODUCTION: EXPANDING THE TERRAIN OF ADAPTATION ALLIES

"Now, they're looking at flooding as an encroachment by itself. They finally realize it. They depend on the outside world.”
~ Meg Pittenger, Environmental Planner, City of Portsmouth

“... military workers can be hit hard by problems outside the gate. If people in the surrounding community can’t get basic services because of extreme weather events or climate issues, I’m not going to just sit in my office on base and say, ‘My kids are home in the dark, let me get to work.’”
~ Cheryl Rosenblum, Senior Director of Strategic Development, CAN

1.1. The military as urban climate ally

1.1.1. Leveraging the military for urban adaptation leadership

At the best of times, the U.S. has been slow to act on climate change at the federal level, stymied by competing priorities, industry influence, and reluctance to challenge established norms. Under the Trump Administration, beginning in 2017, conditions have deteriorated. Climate skeptics weigh in on executive advisory boards, industry lobbyists hold the reigns at multiple federal agencies, and federal environmental capacity is being dismantled. In light of these conditions, some cities and states have taken a leadership role for climate action. Urban leaders in particular have initiated climate plans and joined a proliferating array of prominent city networks such as the Rockefeller 100 Resilient Cities and the C40 Cities Climate Leadership Group which connects 94 of the world’s “greatest cities.”

In the wake of Trump’s withdrawal from The Paris Agreement1, this urban action has gained momentum. Leaders across the public and private sectors have attempted to fill the federal vacuum, forming the coalition We Are Still In, committed to maintaining the United States’ promised reduction of greenhouse gas emissions. Twenty-five of the major cities in that group have now been accepted to the American Cities Climate Challenge, an accelerator funded by Bloomberg Philanthropies. Climate Mayors, formed in 2014 and representing over 400 U.S. cities, have similarly committed to upholding the Paris Agreement, vowing that they will “continue to lead (Climate Mayors, 2017).” The common argument driving these urban networks is that cities are both one of the greatest contributors to the problem of climate change and one of the greatest solutions (Bouteligier, 2013; Hallegatte & Corfee-Morlot, 2011; Johnson, Toly, & Schroeder, 2015;).

1 The Paris Agreement, under the United Nations Framework Convention on Climate Change, was negotiated in December 2015 and subsequently signed by 195 state parties. As of June 1, 2017, President Trump announced that the United States would cease to fulfill its mitigation commitments made under the agreement, though official withdrawal cannot occur until at least November 4, 2020, four years after the agreement went into effect.
Even with this surge of planning activity, progress is slow. The tide may be turning, but in its short history, much urban adaptation planning has amounted to more rhetoric than substance (Bierbaum et al., 2012; Lee & Painter, 2015; Romero-Lankao, 2012; Woodruff & Stults, 2016). Barriers to action include governmental fragmentation, a lack of institutional capacity, and ineffective framing of the issue (Hurlimann & March, 2012; Mimura et al., 2014; Romero-Lankao, 2012). All of these and more consistently frustrate implementation. As a result, major questions remain about just how much cities can achieve on their own and the extent to which they will require federal support.

In the midst of the dismantling of federal environmental capacity, the Department of Defense continues to take climate change seriously, building on 15 years of policy development. In 2003, the Department of Defense (DoD) issued its first report on the national security implications of climate change (Schwartz & Randall, 2003). Since then, the DoD has increasingly considered this prominent risk in national security planning. As a result of Obama-era executive action and ongoing legislative momentum in Congress, adaptation and mitigation have been integrated into DoD codes, policy documents and plans. At the same time, a whole policy apparatus in Washington DC has coalesced to promote a “climate security” agenda drawing attention to climate change as a “threat multiplier” (CNA Military Advisory Board, 2014; U.S. Department of Defense, 2014a; Union of Concerned Scientists, 2016a). In this framing, climate pressures exacerbate international resource conflicts and refugee crises, which in turn impact American interests abroad. The threat multiplier has domestic implications as well. Rising sea levels and storm surge, not to mention a host of other climate impacts, directly compromise coastal installations, impacting military readiness (Committee on National Security Implications of Climate Change for U.S. Naval Forces, 2011; Melillo, Richmond, & Yohe, 2014; Strategic Environmental Research and Development Program, 2013).

Amidst the political fray surrounding climate change, journalists and filmmakers have recognized that the convergence of national security infrastructure and exposure to climate impacts makes a compelling story. With the frequent need to counter skepticism, inaction, or quotidian delay, the military is one of the “unlikely allies,” along with business and religious groups, that functions as a reality check that climate is not “just” an environmental concern (A. Holland and Titley Interviews). Examples such as a Rolling Stone article “The Pentagon and Climate Change: how deniers put national security at risk” and the documentary film Tidewater promoted with the line “water is rising, land is sinking, but the military is here to stay” illustrate this realpolitik (Sorkin, 2017a). These are not just catchy features, but stories geared toward political ends, capitalizing on the military as a “credible messenger” to overcome political divides and achieve climate action.

Offering the ideal confluence of factors, Norfolk, Virginia is the canary in a coal mine often at the center of this story. Norfolk, at the core of the Hampton Roads region, hosts the largest naval base in the world; the region also hosts an array of Army, Air Force, Marine Corps and Coast Guard installations. At the same time, the region is experiencing one of the highest rates of relative sea level rise on the East or Gulf Coasts from the
combined effects of land subsidence and rising water. Flooding from storm surge or “rain bombs” increasingly disrupts military operations and everyday life. So-called nuisance flooding frequently stymies traffic, including road access to bases. As defense infrastructure is periodically overwhelmed by flooding, it makes for a dramatic illustration of the power of climate change in the present.

The changing climate simultaneously threatens continuity at military installations and the physical integrity and strategic value of the urban communities on which those bases depend. This could be considered a shared vulnerability meriting shared solutions, but if not, the consequences for surrounding communities could be severe. Several military responses to reduce internal climate risk are imaginable. If bases were to downsize or entirely relocate, the surrounding communities would be left to grapple with massive economic dislocation on top of the physical disruptions of climate change. At the other extreme, if bases were to armor themselves and develop off-grid self-sufficiency, the surrounding communities might wither and retreat.

While either of these scenarios are plausible, in Hampton Roads, communities and bases are beginning to work together to address shared risks and dependencies. In this process, climate security champions with local and national ties have used the Norfolk phenomenon as part of their message while also using the defense angle to reinforce the urgency and relevance of climate change. This urban/military collaboration for adaptation fosters planning and policy and has become a narrative with its own momentum. All of this raises major questions about how these joint urban/military efforts operate and what adaptation they will produce: What drives communities and installations to collaborate on adaptation planning? Can urban/military collaborations offer a vehicle for progress on adaptation? How will joint urban/military planning influence the inclusiveness and sustainability of adaptation? What impact does the larger climate security agenda have on local adaptation?

Considered from a broader perspective, the phenomenon of urban/military collaboration raises the question: In the context of a very low federal commitment to addressing climate change and serious limits to the capacity of localities and regions to accomplish adaptation, can urban leaders leverage “back door” federal opportunities to reinforce their own adaptation efforts and elevate a broader adaptation agenda?

Before addressing those questions, a few issues raised through the urban/military climate security problem deserve further attention.

1.1.2. Accelerating climate impacts
Accelerating nuisance flooding in Norfolk represents a global reality. Over the last several years, headlines in leading scientific journals and in the popular press frequently broadcast alarming facts about climate change. Not only were climate models accurate, but many predicted effects have occurred sooner than expected, and impacts appear to be accelerating to “unprecedented” levels, “off the charts.” While this is true across the board, it has become especially apparent for sea level rise. In Antarctica, ice loss from glaciers has increased by more than six times in the last four decades, and areas
previously thought to be stable are in fact losing ice. So far, Antarctica has only made a small contribution to sea level rise, but that is poised to increase drastically as glaciers melt from the bottom up (Rignot et al., 2019; The IMBIE Team, 2018). In the Arctic, the Greenland ice sheet is melting at record rates, poised to not only raise sea levels, but change ocean currents which in turn affect storms and extreme weather (Moon et al., 2019; Trusel et al., 2018).

As the results of climate studies become more dire, scientists are increasingly stepping out of their comfort zone as “objective” reporters of scientific fact to issue calls to action. Twila Moon, a scientist at the National Snow and Ice Data Center, and her co-authors conclude a commentary on the expanding footprint of Arctic ice loss to advocate, “Businesses, municipalities, state and national decision makers must weigh the choice of reducing greenhouse gas emissions against spiraling upward costs of reactive adaptation and mitigation.” Their case is bolstered by the recent IPCC special report which suggests that exceeding the “safe” level of warming of 1.5 degrees Celsius, a provisional goal in the Paris Agreement, is likely by 2030 if current trends continue. In the words of one Guardian headline, “We have twelve years to limit climate change catastrophe.” Climate change is incontrovertibly a current, unfolding crisis threatening ways of life around the globe.

1.1.3. Cities as climate leaders
Cities in the U.S. have attempted to fill a federal vacuum, especially after official withdrawal from the Paris Agreement. While acknowledging that the federal regulatory environment matters, Mark Watts, Executive Director of the C40 Cities Climate Leadership Group, delivers an optimistic appraisal of climate progress without the U.S. as an official party to the Paris Agreement. “Mayors of the world’s great cities are leading a sustainable and low-carbon revolution in our urban communities. . . . Mayors of the world’s cities understand that there is no alternative to urgent, bold and transformative action against climate change (Watts, 2017).” While this assessment is unsurprising given his own leadership position, it is emblematic of the hope and hype commonly surrounding cities. Immersed in the adaptation work of “the world’s great cities,” it might be easy to be convinced that cities are taking bold action. High-profile projects such as “The Big U” to buttress all of Lower Manhattan against storm surge appear as compelling harbingers of a “climate-safe” future. However, as political scientist Sara Hughes concludes from an analysis of over fifty case studies, surveys and reports of adaptation planning in the U.S., “adaptation ‘success stories’ largely rely on a handful of leaders (S Hughes, 2015).”

New York City is such an outlier that in a systematic global assessment of adaptation activity, it contributed over a quarter of initiatives globally and over half in North America (Araos et al., 2016). As this assessment found, even many large cities with populations over one million people fail to address adaptation through either planning or implementation. A report analyzing adaptation capacity in the U.S. found that while coastal cities facing sea level rise have been proactive, over 300 cities with more than 100,000 people are not yet undertaking any meaningful adaptation (Plastrik, Simmons, & Cleveland, 2017). Evaluating the quality of 44 local adaptation plans, Woodruff and
Stults find that most of them fail to include implementation processes. Tellingly, these climate experts focus on the U.S. “because local communities in the country have a higher capacity to adapt than those in many other countries, and yet, in spite of this, little formal adaptation action has emerged (Woodruff & Stults, 2016).” Further, smaller cities are not adapting and need to become “part of the action” (Homsy, 2018; Moser, Coffee, & Seville, 2017). This is not to paint a bleak picture, but to illustrate that the promising reports of adaptation in New York, San Francisco, or Miami tend to obscure a larger picture, that in general in the U.S., the baseline for adaptation planning is simply “no adaptation.” City leadership can be an effective strategy, especially in the case of large, wealthy cities, but it is hardly a reliable solution. This is an important perspective to maintain when evaluating unorthodox pathways to achieve adaptation. It also raises the question of what it means for cities to lead as they operate within larger governmental structures.

1.1.4. The risk and response gap: institutional barriers

As climate impacts erupt around the globe and governments at all levels in high and low-income countries lag in their response, analyzing this disconnect is a major focus for research and practice. While some argue that adaptation is defied by intransigent structural limits such as persistent inequality (W. Adger, Lorenzoni, & O’Brien, 2009; J. Barnett & Palutikof, 2014), others argue that addressing institutional barriers could provide a meaningful pathway to adaptation action (Moser & Ekstrom, 2010). From the latter perspective, the Intergovernmental Panel on Climate Change (IPCC) assessment reports and the U.S. National Climate Assessment (NCA) which synthesize analysis from a large cohort of highly qualified researchers serve as essential references.

For both bodies, identifying institutional barriers is one of the key elements in reviewing the state of adaptation. The Third U.S. National Climate Assessment summarizes six major barriers to adaptation: climate change information and decision-making, lack of resources to begin and sustain adaptation efforts, fragmentation of decision-making, institutional constraints, lack of leadership, and divergent risk perceptions, cultures, and values. Similarly, the IPCC Fifth Assessment Report summarizes the five most common barriers which conversely serve as enablers. They identify the importance of multilevel institutional coordination; key actors, advocates and champions; horizontal coordination within similar administrative levels; the need to acknowledge political dimensions; and improved coordination between the public and private sectors (Bierbaum, Lee, & Smith, 2014; Mimura et al., 2014).

From these overlapping lists, two categories emerge that are of particular relevance to urban/military collaboration: framing and fragmentation. Framing, or situating policy issues in relation to relevant priorities, relates to the political and leadership barriers above. In this study, framing is rooted in the defense lens, yet from a larger perspective is just as applicable to other lenses that buttress credibility such as economic competitiveness or public health. Fragmentation refers to the lack of coordination

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2 The U.S. Global Change Research Program, a Federal program mandated by Congress in 1990, periodically produces National Climate Assessments and a range of other climate reports.
between and within levels of government (i.e. local, state, federal) such that policies developed within one department conflict, overlap, or otherwise operate without regard for others. Both framing and fragmentation have implications for other forms of multilevel collaboration beyond the urban/defense case.

Notably, lack of coordination is such a central issue that three out of five of the major barriers highlighted in the IPCC report are predicated on that. In fact, there is little doubt that both the horizontal and vertical fragmentation endemic to multilevel governance are central barriers to and enablers of adaptation. In their most recent assessment, The Urban Climate Change Research Network, which produces reports similar to the IPCC and NCA with a focus on cities, finds that coordinating across government levels, sectors and jurisdictions remains a persistent challenge (Rosenzweig et al., 2015). Similarly, a recent comprehensive report of the adaptation field consistently notes the need for adaptation practitioners to break down silos and for local governments to implement “policy levers” that can scale up adaptation (Moser et al., 2017). The Innovation Network for Communities notes the need for “intergovernmental alignment” extending to federal, state, regional and local action (Plastrik et al., 2017). In her analysis of U.S. adaptation plans, Sara Hughes identifies horizontal and vertical coordination as one of the three areas of necessary institutional change in addition to framing and funding.

The failure to allocate funding and resources is unquestionably one of the most persistent, basic, and perhaps the most obstinate, barrier to adaptation. Therefore, addressing framing and fragmentation are not bottom lines in themselves; rather, effectiveness in addressing them can be evaluated based on the extent to which they facilitate the funding which is necessary for implementation. This is not to advocate slipping into a simple “ends justify the means” assessment, as resources directed toward adaptation must also be evaluated for their effects on inclusion and sustainability. However, given the profound implementation gap, fragmentation and framing challenges urgently require attention.

1.1.5. Openings in urban adaptation theory and practice
This research on urban/military collaborations addresses gaps and key debates in research and practice. First, from an empirical perspective, neither scholars nor professionals have studied the contribution of joint urban/military planning to adaptation. This gap is not surprising on the part of urban studies scholars who tend to be wary of the defense presence in urban development, but is less easily explicable in the professional literature. Several recent reports have called attention to the exposure of coastal military installations as a national security threat (K. Chin, 2013; Parthemore et al., 2016; Union of Concerned Scientists, 2016c). In these cases, the subject of analysis is the installations themselves rather than the installations within a larger urban context. In taking this approach, these experts offer a deeper look into specific defense risks, but by isolating installations, they reinforce the fragmentation of sectors and levels of government. Even the Center for Climate and Security, which does promote joint urban/military planning through their events, has only produced research on the risks to bases themselves. For adaptation research and practice, this represents two important shortcomings; it overlooks calls for multilevel coordination as a key institutional enabler while also overlooking the
substantive overlaps between bases and communities that might point to constraints and opportunities.

In scholarly research, criticism of the role of defense in urbanization tends to preclude investigation of urban/military collaboration. In urban planning, well-founded critiques highlight risks of securitization: increased surveillance, the hardening of public space at all scales, and the militarization of police forces all compromise social justice. Similarly, in environmental studies, critiques of “climate security” point out that this lens tends to privilege national security over human or ecological security. However, several scholars in both of these areas complicate the critique suggesting that security is a more nuanced concept that deserves further empirical evaluation for its actual effects. This research is positioned to do that, taking the critiques seriously, while also remaining open to untraditional pathways to adaptation. The research also sheds further light on the debate over whether and how cities lead on climate action.

1.2 Building this climate alliance: recognizing interdependence and constructing credibility

1.2.1. Methods: a relational case study

I addressed the theoretical, empirical and practical implications of urban/military collaboration by conducting in-depth case studies in two cities: Norfolk, Virginia and San Diego, California as well as a background case study of the climate security policy community in Washington, DC. While Norfolk is clearly the paradigmatic example of this emerging approach to adaptation planning, both Norfolk and San Diego have a significant defense presence, visible climate risk, and developing urban/military collaborations. It was essential to study San Diego to determine whether this phenomenon had any relevance beyond Norfolk and to study Washington, DC to determine whether and how higher levels of governance interplayed with the local level. Conceptually, I considered these three cases “in relation” rather than “in comparison” to each other; I understood influences to continually travel in multiple directions between all three of them rather than the cities each featuring separate instances of a similar phenomenon (Burawoy, 1998; Creswell & Poth, 2017; Flyvbjerg, 2006; Peck & Theodore, 2012; Yin, 2013).

I primarily conducted the investigation through interviews with decision-makers in local communities of practice, but also undertook participant observation at conferences that alternately featured the defense perspective, the community perspective and synergies between the two. Policy documents, plans and popular media provided additional content for comparison and analysis. For many of the key stakeholders, I was able to triangulate between individual interviews, conference presentations to relevant professional communities, and contributions to multiple media sources in order to establish validity in my interpretations. This study has some major limitations: first, the two cases of urban/military collaboration represent the largest defense agglomerations in the U.S. Including other cities, especially smaller ones that are more defense-dependent would have been helpful to further establishing generalizability. In addition, given the focus on decision-makers, I did not interview the various populations that were being “planned
for.” This perspective would be important to more fully understanding the consequences of urban/military planning.

1.2.2. Case study outcomes
In the Norfolk case, several notable aspects of urban/defense collaborations became apparent. First and foremost, Norfolk is not just ground zero for shared urban/defense vulnerability but for recognizing interdependence between the two. This acknowledgement of interdependence on both sides has not always been the norm; historically, Norfolk was heavily dependent on the defense sector as the foundation of the regional economy and therefore conspicuously compliant in accommodating defense demands. Cities in the region had a history, even recently, of rewriting local regulations and sacrificing alternative revenue streams to avoid base closures. But recent flood impacts have fostered the recognition on both sides that communities and bases are inextricably linked both infrastructurally and socially. As flooding has become a joint concern, the power dynamic between communities and installations has shifted. In contrast to the nominally joint planning that occurred previously, the city is now being proactive, recalibrating the relationship to one of partner rather than dependent. In this sense, the urban contingent is leading the collaboration while the military contingent acts as a supporting ally. In addition, formal joint planning processes have created a framework for further collaboration.

In the Hampton Roads region, in spite of a regional planning body, regional cooperation at anything more than an advisory level has been difficult to achieve. The long history of conflict between the City of Norfolk and the City of Virginia Beach, which from the 1950s onward served as the outlet for white flight from Norfolk’s urban core has continued to plague transportation and development decisions. However, the shared military presence has served as a catalyst for the two cities to work together on adaptation planning with the goal of achieving consistent problem definitions and solutions. Over the past decade, as adaptation planning has developed in Norfolk, the climate security angle has had a parallel ascent, playing a critical role in several turning points. This has largely been the result of the work of individual champions who bridge military and civilian worlds, acting as “credible messengers” in conveying the threat of climate change and spearheading action. This work has occurred publicly in explicit bids to raise awareness as well as behind the scenes efforts to build networks and initiate projects. The projects that are still underway have fostered intermunicipal cooperation and increased technical capacity, however they are also tending to prioritize high value infrastructure. The most significant pitfall of the climate security angle in Norfolk has been the attempt to frame the climate message as “apolitical;” this has served as a pretext for disregarding anthropogenic greenhouse gas emissions as the clear cause. This means that so far, adaptation is consistently foregrounded over mitigation, an unsustainable approach.

In the San Diego case, recognition of interdependence was absent. Instead, collaboration for most adaptation efforts was based on the weaker premise of seeking consistency, or ensuring that decision criteria were aligned across various jurisdictions. This was true for regional collaboration in which the military was only a minor stakeholder as well as more explicit urban/military collaboration. In the urban/military context, this premise for
shared adaptation may be a result of very different urban development dynamics from the Hampton Roads region. While San Diego had historically been highly defense dependent, as the economy has diversified, urban growth interests have been willing to disregard and even challenge military needs. Though interdependence did not register, climate security served as a potent message here as well. Champions promoting that angle were key to developing the first instance of urban/military collaboration in the region, once again leveraging the military as a “credible messenger.” The initial agreement between the Unified Port District, an entity with similar jurisdiction to a municipality, and the Navy, in turn served as a seed for further collaboration between surrounding municipalities and the Navy as bayfront municipalities entered into the ongoing Port-led adaptation planning process.

As in Hampton Roads, collaboration occurred because urban decision-makers chose to make it a priority and convinced the Navy of shared interests. In this case, adaptation does not trump mitigation in the same manner as in Hampton Roads. In California, state policy has been at the cutting edge of climate action for over a decade so that mitigation has become commonplace. However, there are risks to the urban/military collaboration in San Diego as well; one of the most prominent is that as municipalities converge on the Port/Navy collaboration which emphasizes responses to sea level rise, this may shift attention away from other climate risks such as drought and heat stress which are potentially more urgent for much of the population.

In the case of the climate security project, rooted in a community of security professionals in DC, elements apparent in the other two cases surfaced, as narratives and strategies resonated between DC and local instances of urban/military collaboration. Interdependence was also operative here, suggesting that it is not only recognized under the particular conditions in Norfolk; rather, the security professionals, retired officers and outside advocates who stand by the climate security frame view social and infrastructural interdependence as a material reality and a persuasive angle for galvanizing adaptation in diverse locations. As was visible in both Norfolk and San Diego, they reinforce the notion that the military is by no means a leader on adaptation, even internally. When it comes to external relationships, military installations have the capacity to collaborate if approached, but have little motivation to initiate these partnerships as climate remains a low priority.

In spite of the relatively weak adaptation within the military, advocates inside the “climate security project” consistently deploy the military as a “credible messenger” based on the image of the institution as “clear-eyed” and cautious. They achieve this by iteratively convincing defense professionals of the notion that climate change is a national security threat and then leveraging this buy-in for a wider audience of decision-makers. Think tanks have used the premises of interdependence and the military as a credible messenger towards the diffuse ends of raising awareness and initiating dialogue. However, advocates have also used them toward the much more concrete ends of changing federal policy and creating channels for access to resources for urban/military adaptation. Some pre-existing policy tools provide this capacity in latent form, available
for creative appropriation, but the new policy tools shaped through the climate security platform provide explicit adaptation capacity.

1.2.3. Contributions to theory and practice

Evaluating the Norfolk, San Diego and climate security project case studies in relation to each other results in one principal finding, that interdependence rather than islanding is central to joint urban/military adaptation planning. The recognition and promotion of interdependence extends to both infrastructure and community. Referring to this premise as interdependence over islanding situates it in relation to the more predictable alternative. This premise is expanded through four related findings emerging from urban/military collaboration, some of which also extend to other reaches of the climate security project. 1. Urban lead/military ally: urban leaders initiate joint planning while military installations serve as allies, creating opportunities for the urban contingent to take ownership of the process; 2. Expanded cooperation: Joint urban/military planning operates as a seed for additional forms of cooperation. 3. Credible messenger: the military serves as a credible messenger at an institutional and individual level; individual “expert champions” serve to connect civilian and military cultures as well as levels and scales of governance; 4. Credibility machine: climate security proponents reconstruct authority and legitimacy for climate action in an environment of doubt and competing priorities.

With geographical and critical distance from preeminent, global cities, these results complicate some propositions in urban studies scholarship. First, the premise of interdependence over islanding challenges the expectation that urban security practices will foster enclaves. Rooted in infrastructural and social networks, this interdependence is not just confined to a local source, but is potentially extensive, implicating distant and socioeconomically disparate flows of people, goods and services. Second, as the military serves the subsidiary role of “ally” in urban/military collaborations, military decision-makers are not imposing authoritarian solutions; rather, they are highly constrained by civilian-controlled planning instruments and norms of stakeholder engagement. Further, as the initiator, the urban contingent retains a degree of leverage to influence the ensuing planning process and outcomes to serve varied community interests above military interests, though the extent to which they will do so remains an open question. Third, shifts in urban/military power dynamics suggest that the notion of defense-dependency is inadequate to capturing the complex relationship; in some cases, military installations are at least as dependent on the community as the community is on the installations. Fourth, military involvement in local adaptation planning, a proxy for federal involvement, can serve as a catalyst for cooperation rather than a spur to competition over federal dollars.

The results of these case studies also complicate some expectations in the climate security literature while elaborating on others. When the military serves as a “credible messenger” for climate change at both an institutional and individual level, it does not necessarily fulfill the critique that climate security privileges national security over human security. Rather, in a loose interpretive space, human dimensions are often invoked through the climate security frame; national security can be deployed as a persuasive link to impacts on everyday lives and livelihoods. In addition, from a
pragmatic perspective, climate security can productively insert climate change into a partisan political agenda as advocates use the frame to raise awareness and provide a rationale for policy and planning. Given the role of doubt and belief in U.S. climate politics, constructing credibility is a feat in and of itself. Reconstructing the climate security project as a complex mechanism to compound credibility reveals just how much work appears necessary to gain traction for a climate agenda.

In relation to practice, these findings contribute to understanding the key institutional barriers of framing and fragmentation. Both premises, recognizing interdependence and constructing credibility, address issues of fragmentation and framing.

Substantively, recognizing interdependence addresses both vertical and horizontal fragmentation. In relation to adjoining municipalities, a military installation fills multiple roles, enacting multiple levels of government. On the one hand, it is like a small city unto itself and acts much like an adjacent municipality. The commanding officer of the base is like a mayor, and will tend to have a relationship with neighboring mayors while city and installation staff address local issues that arise at their border which happens to be a fenceline. At the same time, the installation represents federally owned and controlled land adjacent to or contained within a city. The base commander is like a mayor, but does not have the autonomy of a mayor; they are always accountable to superiors in the chain of command, rather than local constituents. As every installation contains these dual roles, they serve as a multilevel entity in and of themselves. In light of this, recognizing and acting on interdependence between an installation and community is rooted in both vertical and horizontal coordination. When urban/military collaboration gains traction through planning processes, pilot projects, or policy development, the urban entities are simultaneously coordinating vertically with the federal government and horizontally with the installation as a neighboring city.

At the same time, recognizing interdependence is a response to infrastructural and social interconnections, but it is in no sense a given. Rather, it is the consequence of framing as the frequent articulation of the relationship between base and community coalesces and circulates. With repetition, interdependence gains currency and becomes a common way of understanding the relationship, a departure from how it had been understood previously. In this case, the notion of interdependence did not seem to emerge with the kind of explicit intention that guided the climate security message; however, the explicit, strategic apparatus behind the climate security message is instructive as to the work that could be put to use in promoting this related, productive framing.

Employing the military as a credible messenger primarily addresses the framing barrier. As became clear through all three case studies, the military as an institution, as well as individuals representing the military, are often perceived as “apolitical” bastions of authority. In fact, advocates use the military as a political tool to reach right-leaning audiences that might otherwise be averse to discussing climate change. Decision-makers and the public appear to be more open to accepting the reality and urgency of climate change and the need for climate solutions when these messages are communicated through a national security framing, apparently divorced from environmental issues. The
military as credible messenger addresses the fragmentation barrier as well. The climate security message has gained traction through the ongoing work of an advocacy apparatus that operates at multiple levels of governance. Individual champions speak to local problems and needs while also interfacing with a national level policy community that adopts, translates and circulates the climate security message. These policy champions bridge disparate locations and levels of government, converging on key messages, projects and approaches to address related problems.

More effective communication and coordination result from both constructing credibility and recognizing interdependence. But as urban decision-makers harness an ally, the real power of reducing framing and fragmentation barriers is apparent in the increased access to resources and funding. In very concrete terms, local decision-makers have translated interdependence into federal government grants to support joint planning at the local level. Policy champions have used the military as a credible messenger to realize policy changes at the federal level, creating the authority for appropriations for joint infrastructure projects. Urban/military alliances have been fruitful, overcoming framing and fragmentation barriers to address the bottom line.

1.3. Urban climate allies beyond the military case

As a canary in a coalmine, Norfolk is not unique, it is just a harbinger of things to come. Climate impacts are pervasive, and in the U.S., defense installations are also widespread, extending to all fifty states. The vast majority of these could plausibly contemplate joint urban/military adaptation planning, and some of them already are. As recently as 2017, San Diego had no urban/military adaptation planning to speak of, only minor, diffuse forays into dialogue. Since then, formal planning has gotten underway. The planning efforts in Hampton Roads and San Diego, in conjunction with the D.C.-based policy community advocating for such solutions, suggests that joint urban/military adaptation may be an emerging trend.

Given the power and influence of the defense sector in the U.S., the military role in urban adaptation is valuable to understand in its own right. Neither adaptation practitioners nor urban scholars have previously analyzed joint urban/military adaptation planning to understand how it contributes to practice or theory. In that sense, this research partially fills that gap in knowledge. Further, climate security has increasingly become an important climate agenda beyond the American context; with a proliferation of think tanks and advisory boards commingling American and European interests, the climate security project should be understood as a transnational project. However, for those who do not find the defense angle valuable or productive, this research has broader implications. Defense installations are a type of multilevel institution, which from the perspective of adaptation, are enmeshed in a climate agenda. Understanding them contributes to illuminating the ways in which these types of multilevel institutions impact urban adaptation while also establishing the groundwork for further comparative research. This can be pursued in two main ways: through understanding urban/military collaboration as an example of local/federal cooperation or community/anchor institution cooperation. Both of these avenues offer productive openings for further research.
Urban/military collaboration as an instance of local/federal cooperation is the most direct translation. Cities interact regularly with federal agencies other than the DoD with a stake in adaptation such as the Department of Transportation (DoT), Housing and Urban Development (HUD), Federal Emergency Management Agency (FEMA) and Department of Homeland Security (DHS). In one prominent example of local/federal cooperation for adaptation, HUD co-sponsored the Rebuild by Design competition after Hurricane Sandy devastated the New York region; the initiative supported collaborative research and design, funding projects in New York, New Jersey and Connecticut and serving as a model for subsequent post-disaster project funding. Further, the National Climate Assessment highlights examples of adaptation programs that have achieved measures of multi-sectoral and multi-level coordination, such as Firewise Communities USA, a national organization that works with communities to reduce wildfire risk at the wildland-urban interface. The initiative is co-sponsored by the USDA Forest Service and the Department of Interior along with the National Fire Protection Association.

However, what is of interest here is not just any federal intervention into urban development that brings with it planning or investment but federal interventions motivated by a long-term stake in the local built environment. One key characteristic of the DoD is their long-term physical establishment in communities; the DoD directly develops the built environment over time while also exerting authority over local land use within, and to some extent beyond, the boundaries of the installation. Three additional criteria define urban/military collaboration as an instance of urban/federal cooperation for adaptation: 1. The department/agency has policies and/or plans that address climate change, 2. The department/agency’s mission relates to a political agenda that has been tied to climate change; examples other than climate security include environmental stewardship and disaster preparedness. 3. Because of the national footprint, policy and plans are enacted across multiple sites operating in relation to each other. Applying these criteria, there is wide scope for further understanding the opportunities and challenges of urban/federal collaboration for adaptation. This is a particularly important angle because of the level of resources potentially available when local leaders leverage the federal presence to access federal dollars.

The other way to understand military installations as multilevel entities enmeshed in a climate agenda is through the lens of anchor institutions. Anchor institutions are most simply “place-based institutions,” or with slightly more detail are “entities having a large stake in a city, usually through a combination of internal missions and landownership (Birch, 2016; Birch, Perry, & Louis Taylor Jr., 2013; Penn Institute for Urban Research, 2010). The institutions most commonly understood as anchors are hospitals and universities, but they can also encompass cultural institutions, sports facilities, churches, some large corporations, and military installations. Anchor institutions have largely been studied and leveraged for their role in working with communities to achieve local economic development, but this potential clearly extends to adaptation and sustainable development as well. There is some emerging awareness of this in the adaptation field, but the repercussions remain to be fully understood (Dubb, McKinley, & Howard, 2013; Plastrik et al., 2017). In one key analogue to defense installations, hospitals are rooted in place and have a mandate to maintain operational continuity during disasters. After
sustaining impacts from several major disasters, they are increasingly invested in short-
term disaster response, buttressing building codes and operational standards, and they are
also beginning to consider long-term continuity. Hospitals have a national reach in
several ways, as they are increasingly consolidated into larger hospital systems, they are
members of professional networks with best practices for risk management, and they are
members of organizations dedicated to addressing climate change as a public health
issue. This corporate reach, institutional affiliation and federal policy can all shape the
ways in which hospitals interact with the surrounding community such that hospital
adaptation is at once a local and national phenomenon. The adaptation relationship
between hospitals and communities can be seen through an increasingly prominent public
health frame. In addition, debates concerning interdependence versus islanding are
already endemic to discussions of the role of anchor institutions.

For purposes of understanding the wider implications through the angle of local/federal
coopera...
At the best of times, federal progress on climate change, whether mitigation or adaptation, has been slow in the U.S. As the threat of climate change has become more severe, cities, regions, and states have attempted to fill this void. These efforts have gained more urgency in the wake of the Trump administration’s attack on federal environmental capacity and withdrawal from the Paris agreement. While cities are making noble efforts to lead the way, legitimate questions remain about just how much they can accomplish on their own and to what extent they are hampered by a lack of federal support. This leads to the central research question: in the context of a very low federal commitment to addressing climate change and inherent limits to the capacity of localities and regions to accomplish adaptation, what “back door” federal opportunities can urban leaders leverage to reinforce their own adaptation efforts and elevate a broader adaptation agenda?

Through the lens of adaptation practice, this research addresses questions about how the key barriers of ineffective framing and governmental fragmentation could be ameliorated. In simple terms, framing can be understood as situating policy issues in relation to a particular political context while fragmentation refers to the lack of coordination between and within levels of government. In relation to urban theory, this research addresses central debates in three areas of literature: 1. In multilevel adaptation governance, the extent to which cities are empowered or constrained by operating within a multilevel context, 2. In environmental governance, the relative risk and value of climate security as discourse and material practice, 3. In urban planning, the relative risks of the securitization of urbanism.

Positioning the military as a potential ally to cities is a thorny proposition. However, I attempt to fully attend to the critiques while opening up space for assessing unlikely avenues for adaptation, building on the work of scholars in the climate security field and working at the urban/defense nexus who have begun to identify a middle ground. I further suggest rebalancing the critical literature, suggesting that the common baseline of exclusionary adaptation may provide a productive approach to comparing new efforts in high economic value “global” cities, but in others, a very different baseline of “no adaptation” should be the starting point.

I undertook this research in a relational approach, analyzing Norfolk, Virginia and San Diego, California as primary case studies in relation to the climate security policy community in Washington, DC. Case selection criteria related to the defense presence, climate vulnerability, adaptation planning and connections to the larger climate security discourse. Conducting fieldwork in the three locations, I engaged with local networks and
communities of practice to trace the evolution of influential norms, policies and practices, collecting data through semi-structured interviews of over 100 stakeholders and participant observation at conferences and meetings. I also triangulated this data with publicly available policy documents and plans and subsequently analyzed the data through a discourse analysis approach.

Through these methods, I found that recognition and promotion of interdependence over islanding was central to joint urban/military planning, with several repercussions for theory and practice. This prompts re-evaluations of several expected outcomes: adaptation as enclave, authoritarian tendencies of planning jointly with the military, and degrees of defense-dependency. Four related findings support and expand on this central premise of interdependence.

1. Urban lead/military ally: urban leaders initiate joint planning while military installations serve as allies, creating opportunities for the urban contingent to take ownership of the process; 2. Expanded cooperation: Joint urban/military planning operates as a seed for additional forms of cooperation. 3. Credible messenger: the military serves as a credible messenger at an institutional and individual level; individual “expert champions” serve to connect civilian and military cultures as well as levels and scales of governance; 4. Credibility machine: security professionals galvanize a compound “climate security” strategy to develop authority and legitimacy for climate action in terms of urban/military adaptation and beyond.

As urban leaders leverage the climate security project to ameliorate framing and fragmentation barriers, they demonstrate both the power and malleability of the climate security message. As the climate security project unfolds, it remains to be seen whether the incipient potential is directed toward maladaptive or progressive ends.

2.1. Theoretical grounding: reframing security in multilevel adaptation

This relational case study of the climate security project is situated within debates centered in three veins of literature concerning urban planning and environmental governance. First, within multilevel adaptation governance, I contend with debates over the relative power of cities to enact adaptation and the extent to which they are constrained by operating within a multilevel governance context. Second, within environmental governance, I address debates over how to understand the value and risk of military involvement as it bears on discourse and material practice. Similarly, in urban planning, I address debates over the role of a military influence on urbanism.

2.1.1. Multilevel adaptation governance

In accounts of urban climate governance over the past fifteen years, scholars have consistently critiqued a tendency to ignore the multilevel context within which cities operate and to gloss over political struggles in favor of technocratic analysis (Birkmann, Garschagen, Kraas, & Quang, 2010; Gordon, 2018; van der Heijden, Patterson, Juhola, & Wolfram, 2018). In a foundational analysis of “urban” climate politics, Harriet Bulkeley and Michelle Betsill argue that urban politics are substantially mediated by other levels of
government (Bulkeley & Betsill, 2005), consistent with the premise that “the urban” as a construct risks oversimplifying cities, as they are continually constituted through multi-scalar and multi-dimensional processes (Brenner & Schmid, 2015; Harvey, 2007). They subsequently integrated the notion of multilevel governance into the urban climate debate, borrowing a definition of types of multilevel governance from political science (Betsill & Bulkeley, 2006; Hooghe & Marks, 2003). Their explanation of Type II multilevel governance as “new spheres of authority” at “the boundaries of formal politics, in relations between state and nonstate actors, and between national and international politics” has become a useful lens in subsequent analysis of emerging forms of climate governance, in contrast to Type I, which approximates traditional federalism.

Even with this early delineation of the significance of multilevel governance, some urban climate scholars continued to focus on cities as “leaders” in contrast to lagging multilateral institutions and nation-states. In a representative comment, urban climate experts Cynthia Rosenzweig and William Solecki contend that “as cities go, so goes the world (Rosenzweig et al., 2010).” Eight years later, they still posit that cities could serve as agents of transformation, but only by pursuing a stringent set of commitments including integrating adaptation and mitigation, prioritizing the most vulnerable populations and participating in research and action networks (Rosenzweig & Solecki, 2018). In the intervening years, others have continued to claim that cities have a unique role as policy leaders, both for climate and beyond (Brescia & Marshall, 2016).

For those who grappled with the significance of multilevel governance, debates proceeded over the degree to which the multilevel context is constraining versus empowering for urban decision-makers and institutions. Scholars tended to find that urban actors operating in a multilevel context face constraints on policy implementation and the extent of the vision for change (Bierbaum et al., 2012; Stephane Hallegatte & Corfee-Morlot, 2011; Khan, 2013). Separately, examining city power, Frug and Barron have noted the extent to which cities are constrained by higher levels of government, particularly the state in the U.S. context (Frug & Barron, 2013). However, in an assessment of climate planning in 156 U.S. municipalities, Shi et al found that state policy was not predictive of progress on adaptation, with the important caveat that at that time state policies may have been weaker than those of the progressive cities sampled (Shi, Chu, & Debats, 2015).

Recently, Patricia Romero-Lankao, Harriet Bulkeley, and a retinue of co-authors from the urban climate sphere accept as proven that cities are “important agents of change globally;” however, they also view multilevel governance itself as a constraint, often rife with fragmentation, competing framings and priorities (Romero-Lankao et al., 2018). Aptly, political scientist Craig Johnson, one of those co-authors, asks in his own work whether cities are “saviours, supplicants, or agents of change,” finding that while cities affect the landscape of international climate politics, their actions are highly dependent on multilateral institutions and nation-states and their implementation of climate policy at the urban scale may be anemic (C. A. Johnson, 2018). In a recent wide-ranging review of multilevel climate governance, Hughes, Chu and Mason hypothesize the “innovative and creative potential” available to cities but find that their leadership role is confined by
higher levels of government; they take this to indicate that “the urban” must be understood in more expansive spatial and scalar terms (Sara Hughes, Chu, & Mason, 2018).

This presents something of a tautology to study multilevel governance and then suggest that multilevel governance in itself is a constraint or requires that the urban be redefined. Helping to address this, scholars have undertaken closer examination of the barriers to adaptation, many of which are evoked in the multilevel governance literature. Inventories of adaptation barriers tend to converge on several major issues including governmental fragmentation; lack of institutional capacity, champions, and decision-making frameworks; and ineffective framing (Bierbaum et al., 2014; Measham et al., 2011; Moser & Ekstrom, 2010; Oberlack, 2017; Romero-Lankao, 2012). While these diagnoses of barriers do not necessarily stem from a multilevel analysis, some of them are directly implicated in multilevel governance, vertical and horizontal fragmentation being the most obvious. Responding to this analysis, scholars have gone beyond assessing the relative power of cities to argue that local level policy must be integrated into higher level governance frameworks (Fuhr, Hickmann, & Kern, 2018). In a complementary approach, some have argued that cities should be understood as “orchestrators” rather than leaders, exerting indirect influence through networked governance arrangements (Gordon & Johnson, 2017).

Finding barriers to adaptation entails a fairly procedural approach that often inadequately addresses underlying political economic conditions, which pose more than barriers, but actual limits to adaptation. Adger et al engage in a structural political economic critique and are still frequently referenced as a turning point in the debate over barriers or limits to adaptation (W. N. Adger et al., 2009). Whereas previously limits had most frequently been conceived in terms of hard external factors, whether biological, economic, or technological, they propose that instead, limits should be understood as social, which means they are mutable. They critique the epistemological foundations of conventional assessments of limits that claim “objectivity” noting that adaptation is “limited by the values, perceptions, processes and power structures within society (p.349).” In a recent elaboration of this argument, Barnett and Palutikof expand on Adger’s definition of the social limits of adaptation through empirical analysis of six case studies in Australia. They explicitly refute Moser and Ekstrom’s notion of “barriers” which can be identified and managed with the appropriate governance process (J. Barnett & Palutikof, 2014; Moser & Ekstrom, 2010) arguing that “barriers” are in effect limits due to political and socio-economic factors. In addition, they note the likelihood of limits arising through trade-offs or from processes that are distant in space and time.

These inescapable trade-offs reflect some of Barnett’s earlier work on “maladaptation.” In 2010, he attempted to consolidate it into five types that could be used as decision criteria for policy-makers (J. Barnett & O’Neill, 2010). Notably, the first, increasing emissions of greenhouse gases, directly addresses the connection with mitigation. Building on this work, Juhola et al made an effort to “redefine maladaptation,” proposing a simpler framework that foregrounds positive feedback loops that increase vulnerability: 1. Rebounding vulnerability (in the same place, or affecting the implementing actors, 2.
Shifting vulnerability (affecting external actors) and 3. Eroding sustainable development (Juhola, Glaas, Linner, & Neset, 2016). This framework not only distills much of Adger’s previous resilience work, but also serves to operationalize maladaptation. In practice, these three criteria serve as a much higher bar for testing progress on adaptation than the definitions of barriers.

Much of the concern in multilevel governance with conducting analysis at the boundaries of formal politics has been directed toward understanding the operations and impacts of city networks (Bansard, Pattberg, & Widerberg, 2017; Bouteligier, 2013; Fünfgeld, 2015; C. Johnson et al., 2015; Lee, 2013). Some argue that city networks are not only impacting climate change but creating a new form of urban governance that justifies political path dependencies and green growth (Acuto & Rayner, 2016; Davidson, Coenen, Acuto, & Gleeson, 2019; Heikkinen, Ylä-Anttila, & Juhola, 2019). A further body of work has focused on transnational governance involving an array of actors ranging from subnational governments to NGOs to corporations (Andonova, Betsill, & Bulkeley, 2009; Bulkeley et al., 2014).

In defining transnational climate change governance, Andonova et al make the distinction between networks that influence government institutions and those that have the authority to govern. Some of these accounts also allow for fuzzier forms of authority, suggesting that state and non-state is an unhelpful binary, and allowing for the proliferation of diverse governance arrangements across the public and private sectors with various types of authority and legitimacy (Bulkeley & Schroeder, 2011; Newell, Pattberg, & Schroeder, 2012). In spite of various calls for attention to cities other than large, wealthy, world cities, much of the research on multilevel urban climate governance has focused there (Shi et al., 2016).

Multiple scholars continue to insist that the role of power and politics is inadequately addressed in multilevel adaptation governance literature (Gordon, 2018; Sara Hughes et al., 2018). Furthering this agenda has a direct bearing on understanding maladaptation which generally occurs as vulnerability is shifted in time or space to the less powerful. Marquardt makes an initial attempt to develop a framework for understanding how power operates across governance levels, proposing that the distribution of resources and ability to mobilize resources could be mapped across multiple jurisdictional levels (Marquardt, 2017). In contrast, addressing how power operates within cities, Gordon argues that contestation has been undertheorized and requires serious attention to authority, power, and legitimacy, analyzing whether climate regimes merely reproduce existing structures of inequality (Gordon, 2018).

2.1.2. Climate security
Environmental security rose to prominence in international relations and environmental politics in the 1990s, and by the early 2000s, a significant branch of the literature began to focus on climate security explicitly. A related literature on militarized environments and military environmentalism complements and expands on many of the concerns explored in the security literature. Given the interest here in adaptation, this literature review will cover major works concerning climate security rather than documenting the
entire genealogy of the environmental security debate, though the two are intimately linked.

Several influential “discursive entrepreneurs” were instrumental in framing first the environment and then climate as a national security issue in the American policy context. For example, Sherri Goodman, a defense professional, promoted the environment as a security issue during the first Clinton administration, and then in the mid-2000s, worked with a group of consultants at the security think tank CNA to propel climate change as a “threat multiplier” onto the national policy stage (Diez, von Lucke, & Wellmann, 2016).

In an early, widely cited review of “security and climate change,” political geographer Jon Barnett lays out the argument that framing climate change as a security issue risks militarizing rather than humanizing assessments and responses (J. Barnett, 2003). He claims that a similar process unfolded as environmental policy experts adopted “environmental security” rhetoric; rather than pushing environmental issues to the top of the agenda, displacing defense, the environment was subsumed within defense. However, he notes that this can be useful in highlighting the seriousness of the issue, suggesting it requires the level of attention of war. This argument has recently been adopted among advocates of wartime mobilization as a model for quickly galvanizing a large-scale, comprehensive response to climate (Delina, 2016; Delina & Diesendorf, 2013). Unsurprisingly, the wartime mobilization model for climate has been critiqued on similar grounds as the wider climate security framing, with Kester and Sovacool cautioning against the “unintended consequences” of wartime metaphors (Kester & Sovacool, 2017).

Along with Jon Barnett, Simon Dalby who studies the political economy of climate change, has been one of the most prolific and influential scholars critiquing climate security. In his 2009 book, *Security and Environmental Change*, he argues that people rather than states should be at the heart of environmental analysis. Addressing climate change and achieving “Anthropocene security” would require international cooperation from inhabitants of a common biosphere rather than competition between inhabitants of nation-states (Dalby, 2009). He suggests that this approach is emergent in disaster response, but remains far from common place.

In an updated guide to the landscape of climate security, political geographer Matt McDonald builds on Barnett and Dalby’s arguments, establishing that climate security discourse matters because it frames who needs protection, who does the protecting, and what the protective responses are (McDonald, 2013). Using these criteria, McDonald divides climate security into a taxonomy of four framings: national, human, international, and ecological security. He argues that the national security frame is dominant and tends to at best preserve the status quo and at worst encourage perverse responses such as designating refugees a security threat; in contrast, an ecological security framing would offer more transformative possibilities. Like Barnett and Dalby, he concludes that powerful discourses of climate security are unlikely to support progressive responses to climate change (Dalby, 2013, 2015). Gemenne, Barnett et al. further conclude that a national security framing will reinforce states’ tendencies to address immediate threats
rather than root causes and power imbalances contributing to climate insecurity (Gemenne, Barnett, Adger, & Dabelko, 2014).

In the hyperbolically titled *Climate Terror*, a wide-ranging critique of climate catastrophism, political science scholars Sanjay Chaturvedi and Timothy Doyle go so far as to claim that a “neo-security movement” may have superseded a “neo-liberal movement” as security comes to define public and private life, inside and outside of the state (Chaturvedi & Doyle, 2015). They argue that neoliberalism transforms climate change from a threat multiplier to a force multiplier, justifying increased military reach and spending. In this context, the argument that military force is necessary to govern the commons becomes justified, replacing the argument that privatization is necessary to govern the commons.

Surveying the field of “environmental security studies,” political scientist Rita Floyd reviews what she determines to be the three major arguments against linking climate change with security: 1. Climate change requires long-term political solutions rather than short-term security, 2. Climate security at once seems to legitimize a “state of exception” and appeal to normal political responses, 3. Securitization can prompt non-democratic forms of governance. Despite this litany of widely accepted arguments against climate security, in her own work, she challenges these assumptions. She proposes an alternative “just securitization theory” on the grounds that securitization can be appropriate, effective and necessary in some cases (Floyd, 2011; Floyd & Matthew, 2013). She elaborates on this under the rubric of “ethical security studies,” arguing that the use of a security framing should be assessed with a three part framework, evaluating the justice of the cause, the justice of the objectives and the justice of the use of securitization (Nyman & Burke, 2016). Doing so, she offers the prospect that proponents of securitization may use “the mobilization power of security as a force for good in the world (p.78),” a promising alternative to the commonly cited risks of securitization. In a similar vein, political scientist Jonna Nyman elaborates a pragmatic approach to security. Arguing for avoiding foundational truth, she suggests that engaging with the contingent realities of actual problems renders the reconstruction of “better” alternatives possible (Nyman, 2016; Nyman & Burke, 2016).

Diez et al adopt the common critiques of climate security in their comparative study of the U.S., Germany, Mexico, and Turkey, however, they also arrive at a pragmatic conclusion, that securitization places the issue on the political agenda (Diez et al., 2016). While they would prefer a climate agenda focusing on mitigation, civil society actors, and human rather than territorial risk, they argue that the climate security discourse focused on territorial risk in the US may have been necessary to put climate change on the federal agenda, and this may be preferable to leaving action to the states in spite of the broader risks of securitization. Crucially, they note that “given the US context, it may well be that another strategy would have never brought climate change on the agenda as an issue to be taken seriously.” In a similar vein, legal scholar Sarah Light has noted that the military can play an important role in validating climate science, and by extension, action (S. E. Light, 2015).
Scholars of militarized environments and military environmentalism raise many of the same concerns as the geographers and political scientists critiquing climate security. For example, philosopher and cultural critic Adrian Carr includes the military as one of the forces “hijacking sustainability,” arguing that the military is “the very nemesis of civil society and democratic life” and is therefore incompatible with sustainability (Parr, 2009). Similarly to Chaturvedi and Doyle’s critique of “climate terror,” she claims that attempting to bridge the divide between the military and sustainability is the equivalent of Orwell’s doublespeak “war is peace.” However, in his assessment of the “greening of the U.S. military,” since the Cold War, policy scholar Robert Durant finds that the greening, far from becoming an institutionalized ethic, has been patchwork at best (Durant, 2007).

In contrast, several contemporary authors advocate a nuanced view of military environmentalism. Environmental historian Chris Pearson argues that militarized landscapes have too often been analyzed from within staunch pro- and anti-military camps, with scholars either defending “khaki conservation” or condemning the military as a vehicle for capitalist destruction of the environment (Cohn, 1996; Hooks, 2005; Woodward, 2001). Instead, he argues for a more complex view than this simple polarized debate (Pearson, 2012). Writing with Chris Pearson in conducting a comparative analysis of military landscapes in the U.S., Britain, and France, Peter Coates similarly argues for a more nuanced analysis of the relationship between the military and the environment. He acknowledges the risk of “greenwashing” and that the military’s commitment to conservation may obscure an unpleasant past, yet also suggests that because the military has a large and persistent presence, the relationships should be viewed in their full complexity (Coates, Cole, Dudley, & Pearson, 2011).

While there are a number of striking parallels between the climate security and militarized landscape literature, geographer Rachel Woodward who is a proponent of “critical military studies” which takes “military” as a socially constituted category, argues that “military” and “security” should be maintained as distinct defining concepts. Subsuming military within security risks undermining the power of each concept while also ignoring the specificity of military violence (Woodward, 2014). More significantly, she advocates retaining the military/civilian binary as an analytical category because it allows for the envisioning of democratic alternatives.

Critical geographer Erik Swyngedouw is quick to criticize the de-politicizing effects of “apocalypse forever” rhetoric common in diagnosing climate threats; however, a similar de-politicization and disabling effect could be extended to the criticism itself (Swyngedouw, 2010). The “critical military studies” approach embodied in reflexive military landscape literature combined with the “ethical security studies” approach emerging in the climate security literature could provide a framework for interrogating military planning interventions according to legitimate critiques as well as grounded opportunities. This would allow for a pragmatic interrogation of the “politics of the possible” (Parenti, 2013) rather than becoming paralyzed within the apocalyptic rhetoric of militarized climate catastrophes.
2.1.3. Urban/defense nexus

The urban/defense nexus has a long history, consonant with the history of urban form itself. Some of the earliest cities were arranged to provide fortification, and in North America, most early cities began with some form of defensive barricade (Kostof, 1991; Morris, 1988; Reps, 1965). While early walled cities served as a form of collective good, they also always posed questions about who belonged on the inside and who belonged on the outside, who deserved protection and who represented a threat. This type of conflict was infamously internalized to the city in the case of Haussmann chopping grand boulevards through Paris to prevent the poor from erecting barricades and to facilitate the movement of troops through the city (Giedion, 1967). On a continental scale, the American interstate highway system was designed to facilitate tank movement and foster decentralization as a response to Cold War nuclear threats (Dudley, 2001; Farish, 2003; B. Kelly, 1953; Sert, 1944). In a formal sense then, the history of defense and urbanism are inextricably intertwined. However, politically, culturally, and economically, the defense influence in urbanization and urban planning has been somewhat less visible. Scholars across geography and planning have worked to rectify this, bringing to light the often exclusionary impact, or “unintended consequences” of defense strategies and thinking on urbanization processes.

From a critical geography perspective, scholars have examined the militarization and securitization of the city. In 1990, urban theorist Mike Davis developed a stinging critique of the ways in which architects and urban designers produced “defensible space” (O Newman, 1995; Oscar Newman, 1972) to exclude low-income and homeless populations in the built environment while regenerating downtown Los Angeles. This investigation of “fortress urbanism,” evident at multiple scales from “bum-proof benches” to blank security walls, revealed the dark side of Oscar Newman’s widely adopted Crime Prevention Through Environmental Design (CPTED) system. Similarly, urban design scholars critique the “architecture of fear” manifest in gated communities, fortified plazas, and enclosed landscapes (Ellin, 1997). Further, multiple scholars have critiqued the “new military urbanism” in which surveillance and control technologies permeate domestic and public space enacting the perpetual emergency of “the war on terror” in everyday life (Coaffee, Wood, & Rogers, 2009; Giroux, 2004; Gold & Revill, 2000; Graham, 2010, 2012). This threat has also served as an impetus for the increased militarization of urban police forces (Hidek, 2011), exacerbating the racial injustice of police violence from Baltimore to Standing Rock. Security institutions operating at community, national, and global scales render marginalized populations insecure through techniques ranging from CPTED in urban design to incarceration and deportation (Kienscherf, 2013).

Extended to adaptation in the built environment, familiar forms of fortress urbanism can result in “premium ecological enclaves” (Hodson & Marvin, 2009, 2010b) or eco-districts and eco-cities which insulate elites from environmental risk while the less privileged fend for themselves (Anguelovski et al., 2016; Hodson & Marvin, 2010a; Steele, Maccallum, Byrne, & Houston, 2012; Whitehead, 2013). In a world of “splintering urbanism,” infrastructural goods such as water and energy systems are reserved for the elite few while the rest make do with a patchwork of informal services.
This specific form of fortress urbanism bears out long-standing theories of uneven development in which property-owners recurrently abandon declining places and populations, serving their own interests as they seek out more profitable ground (Foglesong, 1986; Harvey, 1996; Smith, 2008). As place-based elites support a neoliberal agenda, vulnerable populations are consistently left behind (Fainstein, 2011; Logan & Molotch, 2007).

Looking beyond the built environment to the evolution of the practice of urban planning, Jennifer Light argues that Cold War defense intellectuals and urban planners translated cybernetics technologies to the problem of urban renewal, deeply shaping urban analysis through a national security agenda. Though this approach failed to resolve the “urban crisis” of the 1960s, the legacy of these techniques and technologies is resurgent in the post-9/11 “homeland security” era. She cautions that these collaborations must be carefully circumscribed to avoid the erosion of local democratic government authority (J. S. Light, 2003, 2004). Similarly, Geisler and Kay warn against the Department of Homeland Security and the Department of Defense’s increasing ability to federalize and militarize local land use policy, both through development and policing as part of the post-9/11 “state of exception” (Agamben, 2005; Geisler & Kay, 2016).

Investigating the regional economic geography of the urban/defense nexus, Ann Markusen questions the contribution of “defense-led innovation” to regional competitiveness, arguing that while it may temper recessions, it often leads to slowdowns in productivity, worker displacement and increased income inequality (A. Markusen, 1985, 1989). Further, as defense facilities shrink or close, they add stress to defense-dependent regions subject to broader economic restructuring (Hill & Markusen, 2013; Oden, Wolf-Powers, & Markusen, 2003). However, as Gauchat et al. argue, “defense-dependency” creates powerful political momentum against base closures, thereby impeding investment in other forms of public infrastructure. Though military spending enhances the quality of some local labor markets, these benefits are highly uneven across regions, concentrating in the “gunbelt” (Gauchat, Wallace, Borch, & Scott Lowe, 2011).

These well-founded critiques of the urban/defense nexus are dominant in the urban design, planning and geography literatures. However, several scholars offer an alternative point of view. Urban historian Roger Lotchin argues that city boosters in California were successful in fostering a “metropolitan-military complex,” converting federal warfare dollars into urban welfare, or jobs and higher education; by his assessment, this helped to build the three powerful metropoles of San Francisco, Los Angeles, and San Diego. Lotchin emphasizes the importance of examining agency in urban history, which in this case, he largely ascribes to city boosters. He rejects other analytical lenses, namely social history, modernization, industrialization, Marxism and urban politics (Lotchin, 1992). With this approach, he makes an argument for the important role of “the urban” as a category of analysis, however he risks over-emphasizing the agency of boosters and verges on boosterism himself, situating the results of their efforts as largely positive without examining the political downsides, or who wins and who loses. While this work provides some historical grounding for the relationship between cities and defense
institutions, it has limited utility in framing questions about the relationship moving forward.

In framing theoretical space for the constructive potential of urban/defense collaborations, Collier and Lakoff’s more recent work seeking to formulate “an alternative politics of security” is far more instructive. They argue that the blanket critique of the militarization of civilian life adopted by critical geographers misses the nuances of how security interventions actually take shape. They identify “distributed preparedness,” the organizational framework for decentralized security planning initially developed during the Cold War which remains central to Department of Homeland Security policy, arguing that this approach was designed to preserve local sovereignty (Collier & Lakoff, 2008). As a result, it may point to the potential for infrastructural and social interventions to enhance security in a way that aligns with progressive politics. In other words, analyzing “actually existing” security measures may lay the groundwork for constructive intervention that enhances social welfare. In a similar vein, Clive Barnett argues that the conventional critique of security is overly limiting, always positioning the public as subjected to the erosion of democratic values, while in fact everyday processes of securitization have been underexamined and undertheorized (C. Barnett, 2015).

2.1.4. Delineating the terrain for critical analysis of urban/military collaboration

Beginning this research by positioning the military as a potential ally to cities rather than an agent of “urbicide” (Graham, 2004) is a politically and ethnically thorny proposition. Situating the work within the terrain of urban climate theory, I attempt to fully attend to the critique while opening up space for possibilities in light of an imperative for climate action (as discussed below). In the urban/defense nexus literature, I attend to the central concerns over the risks and dangers of military involvement, and more broadly, securitization, in urban planning. Clearly, the risks are legion at every scale from street furniture to regional economies and beyond. Authoritarian control of land use planning, urban surveillance and the militarization of police forces are not just threats, but impacts of securitized urbanism that currently play out inequitably in institutions and everyday lives, reinforcing social and political divisions. Concerns about the urban/defense nexus must not be dismissed. While ignoring the risks is a form of willful blindness, ignoring the opportunities is as well.

Many of the critiques leave little space to engage with current conditions in the U.S. in which military spending swamps the federal budget, and the U.S. has the largest military in the world by orders of magnitude. As the identification of the military-industrial complex illustrates, the military has a widespread, pervasive influence in American government and governance. Therefore, it is productive to ask critically how those dollars are directed, and how that influences the urban realm with an eye to opportunities and resources for fiscally straitened cities. The several scholars who find this middle ground are outliers. Lotchin begins to point a way forward as he identifies the transformation of warfare into welfare. Collier and Lakoff point further toward finding counterintuitive legacies in security programs that may enhance social and material conditions in cities. Rather than reinforcing foregone conclusions and foreclosing possibilities, this allows space for the possibility that urban/military collaborations are more democratic,
progressive or effective than might be expected while still acknowledging that they certainly do not fulfill an abstract ideal.

Similarly, literature in the climate security realm tends overwhelmingly toward critique, but there are several veins of scholarship that cut through the prospect of “climate terror” to illuminate paths forward. Recent environmental history scholarship by Peter Coates and Chris Pearson concerning military environmentalism suggests that civilian organizations can productively cooperate with the military, aware of relative trade-offs. More pointedly, Diez et al.’s analysis of climate security discourses makes room for the pragmatic value of using national security to insert climate change into political debate in the U.S. while Sarah Light similarly points to the value of a security framing. More broadly addressing securitization beyond climate, but with reference to environmental matters, Jonna Nyman posits ethical security studies as a pragmatic approach to studying security in practice. These more tempered arguments are useful in framing my questions about the “climate security” agenda as it is actually operating at the national and local level and reverberating between them. Climate security as deployed by prominent think tanks may be subject to some of the more obvious pitfalls of trading national security for human security, but at times there may also be more self-reflexivity than expected among those who espouse this rhetoric. If and when climate security is being operationalized in a politically self-aware manner, it may allow for more progress on adaptation than alternative environmental narratives. Given the stakes of failing to adapt, these questions merit investigation.

The central debate I attend to in the multilevel adaptation literature goes beyond the relative value of security in environmental or urban planning to the core question of the role and power of cities in global urban climate governance. Numerous case studies expand on the complexity of this terrain, analyzing the ways in which a diverse range of institutional actors and arrangements now exert significant influence on climate governance. They tend to find that city power is constrained by other governance levels while the effects of power within cities are inadequately investigated. This literature provides a robust foundation for interrogating the climate security project as a form of multilevel governance and points toward understanding how power operates as these forms of governance are materialized within cities.

My research questions (stated in detail in the next section of this chapter) are situated within the three debates outlined here and three additional, related re-evaluations. These seek to avoid some limitations in current critical urban climate theory, elucidated below: 1. Scholars hold that revanchist adaptation is prevalent, and therefore hew to transformation as the only legitimate goal, 2. This critique is substantially constructed based on studies of global cities, 3. These critical scholars also maintain that engaging climate change as an ecological imperative is a depoliticizing move.

The specter of revanchist adaptation looms large in the urban imagination, as scholars find evidence of a green growth agenda materializing in “premium ecological enclaves” (Hodson & Marvin, 2010a) infrastructural “lock-in” (Acuto & Rayner, 2016) and climate gentrification (Keenan, Hill, & Gumber, 2018). Taking this as not only specter but
baseline seems to demand the transformative adaptation that many urban climate scholars call for (Fazey et al., 2018; Heikkinen et al., 2019; Pelling, 2011; Romero-Lankao et al., 2018) while denouncing simplistic techno-centric solutions. This is a useful and productive critique in locations with not only an effective growth machine, but an effective “resilience machine” (Bohland, Davoudi, & Lawrence, 2018). However, this ignores the prevalence of a very different baseline, that of cities struggling to attract economic development, with little or no adaptation (Homsy, 2018). Critiques of exclusionary infrastructure pre-emptively foreclose many possibilities of adaptation planning; this seems to imply that no adaptation is preferable to the more likely incremental or reformative adaptation which does not deliver social transformation. In less exaggerated terms, it forecloses attention to small or surprising ways in which exclusionary infrastructure and planning may be breached and become more inclusionary.

Though these binaries are overly simplified, situating these positions at the ends of a spectrum suggests a middle ground, an uneasy compromise position of acknowledging politics and remaining critical, but with an eye toward productive critical reflexivity that bears on actually existing practice (Perry & Atherton, 2017). This is not to blithely accept techno-centric solutions, but to bring critical analysis to bear on them that is tempered by existing urban political economic conditions. Acknowledging political contestation is a key distinction from many of the climate security proponents interviewed in this study who suggest that their position and message is apolitical (Chs. 3, 4, 5). Their message is unquestionably political, but the political ends this message serves are varied and malleable.

As suggested above, much of the critique of the military role in planning and securitization more broadly is based on an urban environment defined by global cities, or at the very least primary cities with high real estate values, prone to substantial gentrification. As climate change progresses, and climate-induced migration gets underway, the geography of gentrification may alter beyond recognition as places in long-standing decline receive an infusion of see-sawing capital (Hauer, 2017; Smith, 2011). That long-term speculation aside, the focus on premium cities is a form of myopia, which some have raised (Homsy, 2018; Shi et al., 2016), but still needs to be more substantially countered, not simply with case studies, but with theorizing from beyond the usual suspects. Most of the influential literature in climate governance still derives from studying prominent cities and city networks rather than secondary or even tertiary cities and more diffuse policy influences.

The geography of defense spending and military land diverges substantially from that of elite coastal cities reaching a far more politically and economically diverse landscape (Fig. 2.1). Reinforcing this point, over the last several decades, military land in desirable urban centers such as the Brooklyn Navy Yard and the Presidio in San Francisco has been converted to higher value uses. While San Diego has some name recognition, it plays a subsidiary role to Los Angeles and San Francisco in urban life and urban theory. In Norfolk, certain promoters suggest that the city has a high profile now due to its adaptation work, but it is certainly “under the radar” of global capital and lifestyles. Both
cities benefit from some adaptation work beyond the urban/military collaborations of central interest here; they inhabit a middle ground between the global cities attracting high profile resilience projects and ordinary cities with little to no adaptation. In this sense, they remain a useful foil to many of the cities currently forming the foundation of adaptation analysis. Furthering this line of research, discussions of military adaptation almost as easily evoke locales such as Waveland, Mississippi or Mountain Home, Idaho, as they do Washington, DC.

![Top 10 Defense Spending Locations](image)

**Fig. 2.1** While there is significant defense spending in the Northeast corridor and California, defense dollars also infuse large parts of the U.S. that are often overlooked in moves to theorize urban adaptation. (Source: OEA Defense Spending by State, FY2015)

Finally, one of the major concerns in much of the climate security literature is that invoking climate change as a threat to survival slides into slippery “state of emergency” territory, becoming a pretext for socially regressive policy (Chaturvedi & Doyle, 2015; Swyngedouw, 2010). However, as states of emergency are declared to serve retrograde, nationalist agendas and regressive policy is deployed to reinforce a state of climate denial, the relationship between climate and the politics of planning becomes more complicated, urging alternatives to well-honed critical stances. Suspicion of the political consequences of the climate imperative often translates into a reluctance to make anxieties about ecological survival explicit. Historian Dipesh Chakrabarty attempts to reconcile this, arguing that “species history” and the history of industrialization as wrought through capitalism must be thought through together in making sense of the “shared catastrophe” that threatens life regardless of political differences. Crucially for planning research, though this argument is grounded in thinking through pasts, Chakrabarty extends it to thinking through futures as well, providing a useful point of departure for allowing the climate imperative in (Chakrabarty, 2009).

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3 The February 2019 declaration of a state of emergency by the Trump Administration to build a wall on the U.S./Mexico border serves as a salient example.
Underpinning this research of urban/military collaborations for adaptation to climate change, I maintain that: 1. Incremental and reformist planning should be evaluated as plausible avenues to inclusionary adaptation compared to a “no adaptation” baseline, 2. Studies of secondary and tertiary cities, or locations relatively less attractive to global capital, may substantively expand the theory and practice of adaptation, 3. Critical political analysis is consistent with understanding climate change as an ecological imperative. These propositions inform my interpretation of the findings below in relation to current debates in urban adaptation scholarship.

2.1.5. Research questions
Hypothesis: At a time when federal environmental institutions are being dismantled, the climate security agenda, operating both inside and outside the defense establishment, may be more robust to politics than explicitly environmental agendas. Allowing for substantial qualifications, joint urban/military planning may offer a useful mechanism for urban areas to achieve some progress on adaptation.

Overarching Question: In the context of a very low federal commitment to addressing climate change and serious limits to the capacity of localities and regions to accomplish adaptation, can urban leaders leverage “back door” federal opportunities to reinforce their own adaptation efforts and elevate a broader adaptation agenda?

Specifically,
1. Do municipal and military leaders collaborate for adaptation at the local level in U.S. cities with evident climate risks and a substantial military presence?
   a. If so, how, and in what way?
   b. In these cases, why do they collaborate?
   c. What are the outcomes and how can they be assessed? What are the risks and opportunities for human, urban, and environmental security?

2. Does the adaptation occurring alter or overcome commonly understood barriers or limits to adaptation?
   a. How does it compare to aspirational standards of inclusive and/or sustainable adaptation as defined by current research and practice?
   b. How do the findings contribute to the practice or conceptual development of adaptation?

3. How does the climate security discourse at the national and local levels inform urban/military collaboration?
   a. Does it have discernible impacts on policy and planning?
   b. Whose interests/what interests does a climate security discourse serve?
   c. Do the study findings help to reframe the understanding of climate security?
2.2. Methods: a relational case study of multilevel climate security

2.2.1. Case Selection
In light of the overlapping risks to defense installations and the communities in which they are embedded, I used several equally important selection criteria to identify urban areas as cases: size and number of defense installations, defense contribution to the regional economy, level of flood risk, existence of urban/military planning collaborations, and connection to national climate security policy discourse. Taken together, these factors converge in both Norfolk, Virginia and San Diego, California to form uniquely relevant cases for studying urban/military collaborations for adaptation.

Norfolk, Hampton Roads
Norfolk, Virginia, situated within the Hampton Roads region at the mouth of the Chesapeake Bay, is home to the largest naval base in the world, Naval Station Norfolk. Two additional naval bases, Naval Air Station Oceana and Naval Amphibious Base Little Creek, are situated in neighboring Virginia Beach. Sixteen defense installations in total serving the Air Force, Army, Marine Corps and Coast Guard in addition to the Navy are located in the region. With this substantial defense agglomeration, defense spending plays a significant role in the state and local economy. In 2015, total defense spending in Virginia was $53 billion, making it number one for dollars spent; at 11.2% of state GDP, Virginia also ranked number one for the defense contribution to state GDP (U.S. Department of Defense & Office of Economic Adjustment, 2015). Within the Hampton Roads region, defense spending is $23.6 billion, directly and indirectly accounting for approximately 40% of the regional economy (Clary & Grootendorst, 2013) (Fig. 1).4

At the same time, the mid-Atlantic region is a hot spot for sea level rise, and Norfolk already experiences disruptive “nuisance flooding” or “sunny day flooding.” This flooding at high tide without a storm or major precipitation event is a result of relative sea level rise, which takes into account both global sea level rise and local subsidence (Sallenger, Doran, & Howd, 2012; Sweet & Marra, 2016; Sweet & Park, 2014). While subsidence is occurring throughout the East and Gulf Coasts, the Hampton Roads region is undergoing additional subsidence due to aquifer withdrawals (Jeffers et al., 2016). As a result of these combined factors, the sea level rise recorded at the NOAA Sewell’s Point tide gauge, near the center of Norfolk, has been remarkably rapid at 4.7 mm/year since 1950. This rate is second only to Galveston, Texas, for the entire East and Gulf Coasts (Sweet & Park, 2014).5

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4 Defense spending and employment have been decreasing in the past several years, “forcing” a degree of economic diversification but the defense sector remains a major driver of the regional economy. (Center for Economic Analysis and Policy - Old Dominion University, 2015).

5 In a global study, researchers have identified Miami, New York and New Orleans as among the most exposed port cities in the world; while this is the case, those cities do not have the level of defense presence that Hampton Roads does. Miami has no defense installations and New Orleans has only one which makes a far smaller contribution to the local economy of $933 million. In New York, defense spending is relatively small in absolute dollars and only forms a fraction of the regional economy. Even in this global study, Virginia Beach does fall within the top ten of
A recent NOAA technical report intended to inform the 2018 National Climate Assessment details localized sea level rise projections for the U.S. coasts reflecting a range of five emissions scenarios from low to extreme. In Norfolk, the intermediate scenarios project that two feet of sea level rise (compared to a 1992 baseline) could be reached sometime between the early 2030s and 2050 (Climate Central, 2017; NOAA, 2017) (Fig.2). In conjunction with this, flooding in low-lying areas could reach 276 – 538 discrete events per year, depending on the emissions scenario (Dahl, Fitzpatrick, & Spanger-Siegfried, 2017; Melillo et al., 2014; Spanger-Siegfried, Fitzpatrick, & Dahl, 2014). This could mean that low-lying land is flooded from 10 - 26% of the year (Union of Concerned Scientists, 2016b).

Flooding has already become part of the Norfolk landscape: in 2015, fourteen flood days were recorded (Sweet & Marra, 2016). As a result, people in Norfolk are already experiencing impacts including frequent road closures, difficulty selling real estate in flood-prone locations and damage to vehicles and infrastructure; at the naval base, daily operations are frequently interrupted, so the Navy has already begun raising piers and runways. The main road, Hampton Boulevard, between the base and Norfolk is regularly flooded, undermining operational continuity (K. A. O. Chin, 2014; Connolly, 2015; Union of Concerned Scientists, 2016c; Urbina, 2016).

Given these conditions, policy experts and national media outlets have identified Norfolk as a harbinger of things to come. As global climate reporter Justin Gillis has noted, “the region [Hampton Roads] is a few decades ahead in feeling the effects of sea-level rise, and illustrates what people along the rest of the American coast can expect (Gillis, 2016).” Policy-makers in Norfolk make the case that the Hampton Roads region is second only to New Orleans in populated area exposed to flood risk (Cunniff & Davis, 2016; McGarry, Kovarik, & Tyson, 2014; Yusuf & St. John, 2016).

Given the increasing severity of current flood impacts, municipal and defense stakeholders have already undertaken several joint planning processes. Following on a “Dutch Dialogues” workshop in New Orleans after Hurricane Katrina, architecture firm Waggonner & Ball spearheaded a similar, though more proactive, workshop in Norfolk, convening local public and defense stakeholders along with Dutch experts to develop “blue-sky” plans for the region. The Department of Defense identified Hampton Roads as one of three domestic sites to conduct a Climate Change Preparedness and Resilience Regional Pilot.; These pilots were to include three phases: 1. Development of the planning framework, 2. Development of a regional plan, 3. Implementation (as resources allow) (Office of the Under Secretary of Defense Acquisition Technology and Logistics, 2014). Hampton Roads stakeholders, coordinated by Old Dominion University,
conducted phases one and two from June 2014 – June 2016. The pilot project ended without implementation (Steinhilber, Boswell, Considine, & Mast, 2016; Steinhilber, Whitelaw, Considine, & Matzke-fawcett, 2015). However, the Hampton Roads Planning District Commission (HRPDC) is coordinating a Joint Land Use Study to be completed in 2019 involving the Cities of Norfolk and Virginia Beach and four naval installations to address the impacts of flooding, storms and erosion (HRPDC, 2016). Simultaneously, the City of Norfolk and the Norfolk District of the U.S. Army Corps of Engineers are undertaking a joint flood risk management study (J. Kelly, Connor, Hamor, & Morris, 2016).

The Norfolk and Hampton Roads adaptation plans have largely been galvanized as a result of the real experience of flooding. However, the national climate security agenda has also played a role as influential policy organizations have touted impacts to Naval Station Norfolk and the surrounding community as a security threat (CNA Military Advisory Board, 2014; Connolly, 2015; Foley & Holland, 2012). Additionally, national media outlets have adopted and circulated this as a compelling narrative of climate change as a threat to national security (Beeler, 2016; Gillis, 2016; Goodell, 2015; Price, 2017; Weeks, 2012). Two recent films centered on flooding in Norfolk promote a similar story line for advocacy purposes (Freire, 2016; Sorkin, 2017a). Climate security policy experts located in national think tanks mobilize Norfolk as part of their broader agenda, while local municipal and defense actors integrate climate security into their own local agenda to address flood risk.

San Diego

While the East and Gulf Coasts are already weathering major flood impacts from climate change, the West Coast is experiencing low level impacts, but these are projected to increase. This condition offers an important dimension of comparison; more vulnerable East Coast cities present reactive planning to current flooding while West Coast cities may present more proactive planning for future flooding. In terms of adaptation to flooding, East and Gulf Coast cities could potentially offer both cautionary tales and models for West Coast cities. This is not to discount that the West Coast is already experiencing and adapting to other climate impacts including heat stress and drought; however, those impacts are less of a priority for this study.

Like the Hampton Roads region, San Diego County has a major agglomeration of defense installations. Naval Base San Diego is the largest on the West Coast. Naval Bases Point Loma and Coronado are immediately adjacent; additional Navy, Coast Guard and Marine Corps bases bring the regional total to fourteen. California ranks just behind Virginia in total defense spending in the state at $49.3 billion, however due to the state’s larger and more diverse economy, California ranks 24th in terms of the defense contribution to state GDP (U.S. Department of Defense & Office of Economic Adjustment, 2015). Locally, it is a different story; at $15.3 billion in annual defense spending in San Diego, the region ranks second in the country, contributing directly and indirectly to 22% of regional GDP (San Diego Economic Development Corporation, 2016; SDMAC, 2016) (Fig.1).

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8 Fairfax County, in northern Virginia, is first at $17 billion.
On average, the East Coast and Gulf Coast of the United States are undergoing higher rates of sea level rise than the West Coast largely due to the geological characteristics of the coasts (i.e. low-lying wetlands versus high cliffs) and rates of subsidence. Therefore, San Diego has less rapid sea level rise than Norfolk. However, due to the intersection of several tectonic plates, the southern California Coast has higher rates of sea level rise than the West Coast extending from northern California through British Columbia (Committee on Sea Level Rise in California, Oregon, Board on Earth Sciences and Resources;, Ocean Studies Board;, & Division on Earth and Life Studies; National Research Council, 2012). The NOAA tide gauge in San Diego shows an average sea level rise over the last century of 2.13 mm/yr, a rate which is high for the West Coast (Griggs, G, Árvai, J, Cayan, D, DeConto, R, Fox, J, Fricker, HA, Kopp, RE, Tebaldi, C, Whiteman, 2017).

While the rate of sea level rise has historically been lower in San Diego than Norfolk, with the global acceleration of sea level rise, the rate is likely to be between 4.1 and 6.2 mm/year in San Diego through 2030 (Griggs, G, Árvai, J, Cayan, D, DeConto, R, Fox, J, Fricker, HA, Kopp, RE, Tebaldi, C, Whiteman, 2017). According to the NOAA data informing the 2018 National Climate Assessment, under intermediate scenarios, sea levels are projected to rise one foot between the late 2020s and 2040 (NOAA, 2017) (Fig.2).

At this point, San Diego has experienced nuisance flooding in streets up to several miles inland during “King Tides” as well as extensive road closures during major precipitation events. Scientists see this level of flooding, which is currently rare, as a harbinger of sea level rise to come (Cal-adapt, 2015; National Ocean Service, NOAA, & U.S. Department of Commerce, 2015). In coming decades, flooding will disrupt businesses and damage homes. It will also degrade sea bluffs, beaches, and wetlands, harming not only their vital ecological functions, but the “ecological services” that they provide to surrounding communities by filtering water and protecting coastal development. Of course the beach itself also plays a large role in tourism and the local economy (The City of San Diego, Krout Associates, & Energy Policy Initiatives Center USD School of Law, 2015).

In response to projected flooding as well as drought, wildfires, and heat stress, the city and region of San Diego have initiated multiple planning processes for mitigation and adaptation. Current local and regional adaptation processes only include defense investment stakeholders in a minor consultative capacity (ICLEI-Local Governments for Sustainability USA, 2012; San Diego Foundation, n.d.; The City of San Diego et al., 2015). However, the Navy is independently undertaking certain adaptation efforts in parallel (Chadwick, Wang, Brand, & SSC Pacific, 2015; J. A. Hall et al., 2016). In addition, SANDAG, the San Diego Association of Governments, has a Regional Military Working Group in place and has noted the need to collaborate with military partners on

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9 The Crescent City tide gauge, used in a recent study as representative of northern California conditions, actually shows negative sea level rise as a result of coastal uplift (Griggs, G, Árvai, J, Cayan, D, DeConto, R, Fox, J, Fricker, HA, Kopp, RE, Tebaldi, C, Whiteman, 2017). This relative lack of risk for the northern coast could change dramatically with a major earthquake.
mitigation and adaptation (SANDAG, 2014). The climate security agenda is beginning to play a role in San Diego as well (Fetzek, 2017a). In February, 2017, the Center for Climate and Security held their first West Coast event, “Security and Climate Change: Issues and Perspectives for the Pacific Coast.” The one-day conference convened local and national politicians as well as defense, foundation, state, and academic stakeholders. While existing local and regional plans have informally included defense stakeholders, the participants expressed interest in developing more formal collaborations for adaptation.

One additional case selection criteria played a minor role: identifying second or third tier cities. Cities such as New York, Miami, Los Angeles, San Francisco and DC, which are all exposed to climate impacts, have global name recognition and figure prominently in the national imagination as crucial places that deserve attention and resources. As a result, they not only have the political and economic capacity to draw further resources, they also receive more research attention. Recently, adaptation scholars have increasingly identified the need to shift this trend toward cities with lower capacity (Bulkeley & Tuts, 2013; Shi et al., 2016), therefore I decided to select the less visible places of Norfolk and San Diego.
<table>
<thead>
<tr>
<th>Population*</th>
<th>Norfolk</th>
<th>San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA Name</td>
<td>Virginia Beach-Norfolk-Newport News VA-NC MSA</td>
<td>San Diego-Carlsbad, CA MSA</td>
</tr>
<tr>
<td>MSA Rank 2015</td>
<td>37</td>
<td>17</td>
</tr>
<tr>
<td>Population 2015</td>
<td>1,724,876</td>
<td>3,299,521</td>
</tr>
<tr>
<td>% Change Since 2010</td>
<td>2.87%</td>
<td>6.60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region/Planning</th>
<th>Norfolk</th>
<th>San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region Name</td>
<td>Hampton Roads</td>
<td>San Diego</td>
</tr>
<tr>
<td>Municipalities Included</td>
<td>Norfolk, Newport News, Portsmouth, Poquoson, Hampton, Virginia Beach, Chesapeake (+)</td>
<td>Carlsbad, Chula Vista, Coronado, Imperial Beach, National City (+)</td>
</tr>
<tr>
<td>Regional Planning Orgs.</td>
<td>HRPDC (17 local govs.)</td>
<td>SANDAG (19 local govs. = 18 cities + co.); Climate Collaborative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defense**</th>
<th>Norfolk</th>
<th>San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Defense Spending - State 2015</td>
<td>$53 billion</td>
<td>$49.3 billion</td>
</tr>
<tr>
<td>Defense Spending as % of State GDP</td>
<td>11.2% (rank 1)</td>
<td>2.1% (rank 24)</td>
</tr>
<tr>
<td>Defense Location (s)</td>
<td>Newport News City + Norfolk City + Portsmouth City + Virginia Beach City + Hampton City, VA</td>
<td>San Diego County, CA</td>
</tr>
<tr>
<td>Defense Spending per Location (s)</td>
<td>Newport News City is no. 8 in spending for all locations in U.S. at $6.8 billion; total in region = $23.6B</td>
<td>$15.3 billion (no.2)</td>
</tr>
<tr>
<td>Personnel</td>
<td>92,157</td>
<td>110,204</td>
</tr>
<tr>
<td>Defense Spending per Resident</td>
<td>$6,324</td>
<td>$1,260</td>
</tr>
<tr>
<td>Defense Spending as % of regional economy</td>
<td>DoD directly &amp; indirectly accounts for 40% of region’s economy (HRPDC)</td>
<td>22% of GDP (SD EDC)</td>
</tr>
<tr>
<td>Installations (number)</td>
<td>14</td>
<td>16 (SD EDC)</td>
</tr>
<tr>
<td>Naval bases (names)</td>
<td>Naval Station Norfolk; Naval Air Station Oceana (VB); Naval Amphibious Base Little Creek (VB); Norfolk Naval Shipyard</td>
<td>Naval Base Coronado; Naval Base San Diego; Naval Base Point Loma</td>
</tr>
</tbody>
</table>

SD EDC = San Diego Economic Development Corporation
HRPDC = Hampton Roads Planning District Commission
SANDAG = San Diego Association of Governments
VB = Virginia Beach


Fig. 2.2 Population and defense spending characteristics for Norfolk and San Diego.
Fig. 2. Sea level rise (SLR) projections under intermediate – high emissions scenarios from recent NOAA data. SLR could reach two feet between the early 2030s and 2050 in Hampton Roads and over one foot in San Diego in that timeframe.

<table>
<thead>
<tr>
<th>Tide Gauge</th>
<th>Norfolk</th>
<th>Virginia Beach</th>
<th>San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sewell's Point</td>
<td>Chesapeake Bay Bridge Tunnel</td>
<td>San Diego</td>
</tr>
<tr>
<td>NOAA Intermed. SLR (ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>0.9</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>2030</td>
<td>1.2</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>2040</td>
<td>1.6</td>
<td>1.6</td>
<td>1.0</td>
</tr>
<tr>
<td>2050</td>
<td>2.0</td>
<td>2.0</td>
<td>1.3</td>
</tr>
<tr>
<td>2100 (for comparison to GMSL)</td>
<td>4.8</td>
<td>4.7</td>
<td>3.7</td>
</tr>
<tr>
<td>NOAA Intermed. High SLR (ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>1.1</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>2030</td>
<td>1.5</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>2040</td>
<td>2.1</td>
<td>2.0</td>
<td>1.4</td>
</tr>
<tr>
<td>2050</td>
<td>2.7</td>
<td>2.7</td>
<td>1.9</td>
</tr>
<tr>
<td>2100</td>
<td>7.1</td>
<td>7.1</td>
<td>6.0</td>
</tr>
<tr>
<td>NOAA High SLR (ft)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>1.3</td>
<td>1.3</td>
<td>0.7</td>
</tr>
<tr>
<td>2030</td>
<td>1.9</td>
<td>1.9</td>
<td>1.2</td>
</tr>
<tr>
<td>2040</td>
<td>2.6</td>
<td>2.6</td>
<td>1.8</td>
</tr>
<tr>
<td>2050</td>
<td>3.5</td>
<td>3.5</td>
<td>2.5</td>
</tr>
<tr>
<td>2100</td>
<td>9.8</td>
<td>9.8</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Low (not included here) = 0.3 m GMSL (SLR by 2100 for all scenarios)
Intermediate = 1.0 m (3.28’) GMSL + middle scenario; multi-year flood risk
Intermediate high = 1.5 m (4.92’) GMSL
High = 2.0 m (6.56’) GMSL
Extreme (not included here) = 2.5 m GMSL

2.2.2. Relational case study
I undertook this research through a relational case study approach (Burawoy, 1998; Creswell & Poth, 2017; Flyvbjerg, 2006; Yin, 2013); rather than attempting a direct comparison of places that may be too unlike in important ways, I instead examined the relationships between places (Fig.2.3). This included the way that agendas promoted by the DC-centered climate security policy community are translated and implemented within different local contexts and the way the material and discursive practices in those locations in turn influence policy at multiple levels, and across local contexts. The research was conducted with the awareness that the influence on climate security is not unidirectional, but recursive: the narratives and experiences arising from the local contexts influence the larger discourse.

This research is similar to policy mobilities research and employs a method that could be described as a “distended case approach” as Jamie Peck and Nik Theodore describe their method for following policy that travels. They call for a “reflexive methodology, tracing emergent policy mobilities across distended networks of relationally connected sites, and accounting both for dominant patterns and trajectories of transformation, but also for unscripted deviations and alternative mutations (Peck & Theodore, 2012).” While much
of the policy mobilities literature is explicitly concerned with the transnational movement of policy, the framework for understanding policy travel is equally relevant for the translocal movement of policy within a transnational context even though the scope of this specific research project is confined to a national context. This framework is relevant in that it can be usefully rescaled to a translocal domestic context to understand how policy mutates in different contexts, but also implicates the research within a transnational context where it certainly extends and could be explored further.

Fig. 2.4 Understanding the cases through a relational approach meant considering the influences that travel between them as much as the places themselves. Connections between Norfolk and San Diego were thin, but policy and climate security agenda influences did travel between them, refracted through DC.

2.2.3. Data collection and analysis
I conducted fieldwork in Washington, DC, Norfolk and San Diego, where I engaged with local networks and communities of practice to trace the evolution of influential norms, policies and practices. I collected data through semi-structured interviews and participant observation at conferences and public and private meetings. I also organized a symposium at MIT in April 2017 related to my research topic which provided the opportunity to develop relationships with several key informants and to begin to be immersed in the climate security culture. Similarly, attending conferences served several purposes including developing relationships with potential informants, gathering substantive perspectives from presenters, holding informal conversations which pointed to directions for research, immersing myself in the climate security culture, and triangulating public presentations with private interviews, for the same respondents or respondents in similar categories.
The data collection unfolded through an iterative process with two rounds of fieldwork. Preliminary analysis after the first round allowed me to identify key gaps and themes to pursue during the second round. In the first phase, I conducted interviews in Washington, DC, Norfolk, and San Diego (Fig.2.4). In the second phase, I conducted additional interviews and attended additional conferences in Norfolk and San Diego. I conducted interviews with stakeholders in local government, non-profit, academic, community, and military decision-making positions to gain insight into the complexity of evolving adaptation agendas and outcomes. I began by snowball sampling through key informants; where possible, I also took a more systematic approach, documenting participants in important planning processes and targeting those who had participated in multiple processes and could therefore provide some comparative insight. Where possible, I also attempted to systematically interview people in equivalent positions across multiple types of organizations. The majority of the interviews were conducted in person, recorded, transcribed and coded, though as circumstances required, some were conducted on the phone or in person and not recorded.

<table>
<thead>
<tr>
<th>Location</th>
<th>Individuals Contacted</th>
<th>Interviews Completed</th>
<th>Interviews Recorded</th>
<th>Participants in Recorded Interviews</th>
<th>Participants in Other Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>20</td>
<td>18</td>
<td>8</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Norfolk</td>
<td>64</td>
<td>39</td>
<td>35</td>
<td>47</td>
<td>4</td>
</tr>
<tr>
<td>San Diego</td>
<td>54</td>
<td>40</td>
<td>26</td>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>138</td>
<td>97</td>
<td>69</td>
<td>90</td>
<td>28</td>
</tr>
</tbody>
</table>

Fig.2.5 Number of Interviews Conducted. On several occasions, meetings included more than one person, so I have included the number of participants as well. The number recorded is included because those interviews were transcribed and coded.
**Fig.2.6** Events attended featuring military, urban, and joint perspectives.

For the interviews, my intent was to adhere to a semi-structured format. I did that initially, but as I became more immersed in the material, it was more productive to hold less structured conversations which I steered toward key topics to allow for comparison. This format also allowed for more unsolicited commentary on the subject matter from respondents which sometimes produced surprising and useful insights which would not have otherwise emerged. In DC, the key interview topics included the respondent’s involvement in the climate security issue, evaluation of the climate security approach and impacts, and how this had changed under the new (i.e. Trump) administration. In Norfolk and San Diego, the key interview topics included descriptions of key adaptation planning processes in which respondents had been involved, their perspective on how collaboration has worked where it has occurred, and limitations, successes and expected results of the process. When initiating interviews, I briefly described my research which I had also described in the course of setting up the interviews. Throughout, when asked for my opinion or what I was trying to find out, I attempted to be forthcoming, operating with the understanding that I would necessarily influence the process but would remain reflexive about that.

I used the interviews as a primary lens with which to view the material; with their length, depth, and digressions they were more revealing than the polished text in policy documents. However, I did triangulate interview responses with data gathered through participant observation of conferences and meetings as well as content analysis of policy documents and plans (Figs.2.5, 2.6). I developed the analysis of these three data sources through a discourse analysis process, attending to discourses, subject positions, and practices as I synthesized emerging findings (Hajer & Versteeg, 2005; S. Hall, 1997; Sharp & Richardson, 2001; Willig, 2013).

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch Dialogues</td>
<td>Norfolk, VA</td>
<td>6/20-22/15</td>
</tr>
<tr>
<td>Security and Climate Change: Issues</td>
<td>San Diego, CA</td>
<td>2/21/17</td>
</tr>
<tr>
<td>and Perspectives for the Pacific Coast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscripting Climate Symposium</td>
<td>Cambridge, MA</td>
<td>4/4/17</td>
</tr>
<tr>
<td>Tidewater screening at AAG</td>
<td>Boston, MA</td>
<td>4/7/17</td>
</tr>
<tr>
<td>Association of Defense Communities National</td>
<td>Washington, DC</td>
<td>6/19-21/17</td>
</tr>
<tr>
<td>Summit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hampton Roads Adaptation Forum</td>
<td>Suffolk, VA</td>
<td>10/13/17</td>
</tr>
<tr>
<td>Naval Station Norfolk: Charting our Next</td>
<td>Norfolk, VA</td>
<td>10/20/17</td>
</tr>
<tr>
<td>100 Years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virginia Coastal Policy Center:</td>
<td>Williamsburg, VA</td>
<td>10/27/17</td>
</tr>
<tr>
<td>Defending Our Coasts</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I used the interviews as a primary lens with which to view the material; with their length, depth, and digressions they were more revealing than the polished text in policy documents. However, I did triangulate interview responses with data gathered through participant observation of conferences and meetings as well as content analysis of policy documents and plans (Figs.2.5, 2.6). I developed the analysis of these three data sources through a discourse analysis process, attending to discourses, subject positions, and practices as I synthesized emerging findings (Hajer & Versteeg, 2005; S. Hall, 1997; Sharp & Richardson, 2001; Willig, 2013).
To begin analysis, though I was recording interviews, I also took notes which I immediately began collating to identify emerging themes. These were useful to initially determine ways forward for the analysis. To begin coding, I developed an initial code system which was largely inductive, based on the first round of themes and salient points that emerged from the texts. However, this attempt was not very productive as it resulted in numerous codes with little explanatory power. I revised the coding system with a more deductive approach that was ultimately more effective. I created the codes based on well-established barriers to, and mechanisms for, adaptation and then translated a similar type of analysis to collaboration. While I did devise these from the outset, when another important issue clearly emerged inductively, I added that as well. For example, lack of authority across the fenceline was a significant obstacle to adaptation that is unique to cases involving military installations. Ultimately, I classified codes as obstacles, drivers, and mechanisms for both adaptation and collaboration (Fig.2.8). I also noted instances of rich language that conveyed critical issues. After coding, I identified frequent codes and areas of overlap to determine the most relevant factors.

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Location</th>
<th>Participants</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate and Security Working Group, Center for Climate and Security</td>
<td>DC</td>
<td>Frank Femia, Caitlin Werrell, et al</td>
<td>6/28/19</td>
</tr>
<tr>
<td>City of Virginia Beach Council Meeting re: Dewberry SLR report</td>
<td>Norfolk</td>
<td>City of VB City Council, Brian Batton, Delceno Miles + interested public</td>
<td>7/11/17</td>
</tr>
<tr>
<td>Port/Navy informal strategy session</td>
<td>San Diego</td>
<td>Len Hering, Walt Wilson, Chris Stathos, Rafael Castellanos</td>
<td>8/9/17</td>
</tr>
<tr>
<td>USACE - Norfolk District Meeting with Chief, Operations and Regulatory</td>
<td>Norfolk</td>
<td>Jason Kelly, Christine Morris, Thomas P. Smith, Susan Conner, Michelle Hamor</td>
<td>10/17/17</td>
</tr>
<tr>
<td>Norfolk zoning hearing</td>
<td>Norfolk</td>
<td>Norfolk City Planning Commission + interested public</td>
<td>10/17/17</td>
</tr>
</tbody>
</table>

Fig.2.7 Meetings attended.
Adaptation Obstacles | deductive codes from literature | competing priorities, lack of institutional capacity, lack of info/decision-making, rhetoric over action, lack of coordination, lack of champions, climate politics, ineffective framing
---|---|---
added during coding | deferred maintenance/old infra, authority across fenceline, lack of buy-in

Adaptation Drivers | deductive codes from literature | experience of impacts, impacts mission (military), framing, champions
---|---|---
added during coding | turning point, congressional action, self-sufficiency, DoD action, executive action, publicity, economic impacts, interdependence (military), state policy

Adaptation Mechanisms | deductive codes from literature | assembling funding, institutional capacity, planning in spite of uncertainty, committed projects/resources, mainstreaming, codes and plans
---|---|---
added during coding | adaptation organization, adaptation project/process, information sharing, mitigation, long-range planning, political relationships, staff relationships, infrastructure, retreat

Adaptation Character | deductive codes from literature | shifts vulnerability, undermines mitigation
---|---|---
added during coding | limited participation, undemocratic, cronyism

**Fig.2.8** In the coding process, I discarded initial inductive codes, replacing them with a system of deductive codes from adaptation literature. I augmented these with codes that captured salient issues that arose during the analysis process. I used the codes individually but have grouped them here for illustrative purposes.

2.2.4. Limitations and Generalizability
The key limitation to external validity is the number of cases. With additional capacity, the study could have included additional cases selected according to several different types of criteria, for example, they could vary by flood vulnerability, including other East Coast cases, a Gulf Coast case, and/or a Hawaii case; they could vary by military/community relationship, or degree of defense dependency; or they could vary by pre-existing urban/military adaptation planning intervention, for example including other locations that conducted intergovernmental pilot projects. All of these would provide insight into how the climate security discourse is mobilized and translated between different political, economic and geographic contexts, and would help to confirm or complicate the findings from the two primary case studies in this research. In addition, the study could benefit from comparison to urban/defense collaborations in other countries including the UK and Australia where a similar climate security discourse has begun to take root.

Another limitation arises from the respondent sampling method. While I attempted to interview key stakeholders in equivalent positions across organizations, receiving consent...
for interviews was somewhat dependent on personal relationships and networks. My access to respondents was sometimes dependent on another trusted stakeholder vouching for me and this was especially the case with military stakeholders who were generally less accessible than those working for local governments or NGOs. As a result, I was ultimately able to interview more retired than active duty personnel and the urban contingent was overrepresented in the interviews though they were still able to shed light on the relationship with the military. In some ways, the urban contingent was more important to this research given that the overarching research question is focused on how urban decision-makers can leverage the military presence rather than how military decision-makers address adaptation.

A limitation also arises from the respondent sample itself; because the research was focused on the actions of decision-makers, I interviewed policy elites, urban elites, and mid-level technocrats. Being less invested in the climate security agenda, the technocrats provided a degree of check on the self-styled champions who claimed extensive credit, and sometimes sole agency, for themselves. However, I did not interview critics of the climate security agenda or the targets of planning in any of the locations. The interpretations and effects on those being “planned for” through urban/military collaborations would be an important area of future research.

All of the research was conducted through publicly available material and willing interviewees. I did not submit any Freedom of Information Act requests. This issue arose in an early interview with a security professional who suggested that FOIA requests could be viewed as adversarial and therefore detrimental to the research. Nevertheless, that would provide an additional form of triangulation.

In spite of these limitations, the results of this research will potentially be generalizable along several dimensions. First, the implications of these specific urban/military collaborations will be relevant to numerous other urban areas in the U.S. with significant military concentrations that are experiencing climate impacts. Second, this research may be generalizable to other types of urban/federal collaborations. Finally, the research is also relevant to collaborations between urban areas and other powerful institutions which play a large role in the local economy and are highly embedded in a particular place, such as healthcare systems, universities, or dominant industries.

2.3. Findings: interdependence over islanding
Evaluating the Norfolk, San Diego and climate security project case studies in relation to each other results in one principal finding, that interdependence rather than islanding is central to joint urban/military adaptation planning. The recognition and promotion of interdependence extends to both infrastructure and community. I refer to this tendency as interdependence over islanding, situating it in relation to the more predictable alternative. This premise is expanded through four related findings emerging from urban/military collaboration, some of which also extend to other reaches of the climate security project.
1. Urban lead/military ally: urban leaders initiate joint planning while military installations serve as allies, creating opportunities for the urban contingent to take ownership of the process; 2. Expanded cooperation: Joint urban/military planning tends
to bring additional forms of cooperation within its sphere. 3. **Credible messenger:** the military serves as a credible messenger at an institutional and individual level based on perceptions of the institution even while climate action is a low priority internally; individual “expert champions” serve to connect civilian and military cultures as well as levels and scales of governance; 4. **Credibility machine:** having developed credibility with the defense establishment, climate security advocates leverage this credibility for a broader audience in iterative loops, continually compounding credibility for climate action; doing so, they reconstruct authority and legitimacy for climate action in an environment of doubt and competing priorities.

**2.3.1 Interdependence over Islanding**
A discourse of interdependence is a central mechanism driving the specific urban/military agenda within the larger climate security project. Interdependence has been an operating assumption in long-standing military/civilian planning tools and programs. This includes a paradigm of sustained engagement between local installations and communities to address everyday issues. More recently, basic interdependence has become an operating assumption for internal military adaptation policy targeted within “the fenceline.” Basic interdependence includes an acknowledgement of the obvious logistical reality that basic necessities and services are supplied from beyond military installations. Recently a more robust version of interdependence has been incorporated into policy, integrating the insight that bases are often unable to function without the surrounding community, or are, in other words, dependent on the community. In addition, a more powerful tendency toward recognizing full-blown infrastructural and social interdependence has been emerging in locations including, but not limited to, Norfolk, where communities and installations have experienced mutual disruptions as a result of environmental stresses.

Local decision-makers and climate security advocates mobilize this discourse of interdependence to promote urban/military planning as a form of adaptation and specific policy models to advance adaptation at multiple levels and scales of governance. In all of these cases, military involvement is driven by self-interest, whether an interest in addressing their own climate vulnerabilities, or in reinforcing their social license to operate within the community. This predictable fact does not detract from the material contribution of their involvement, but does influence the interests that will tend to be served by collaboration, including the relative significance accorded to military versus community interests, as well as the priority accorded to competing interests within the community.

**2.3.2. Urban lead/military ally**
As the term ally suggests, the military may be amenable to the prospect of establishing urban/military collaborations, but is usually the willing associate rather than the instigator. The urban deserves the first position in the term urban/military collaboration, not just as a matter of emphasis, but to reflect a primary position. As an ally, the military, typically local military installations or the military region, is a subsidiary partner. The military is primed to be receptive to overtures based on the experience of climate risks and existing military climate policy. Experience demonstrates that if approached, they will join community adaptation efforts. In this sense, collaboration prospects are an
opportunity for urban leaders to initiate, and take ownership of, joint adaptation processes from which the military will also benefit. Shared service agreements in other realms indicate that there may be increasing recognition that this is another opportunity for the military to benefit from sharing services with the private sector as the defense budget continues to neglect infrastructure, operations and maintenance.

2.3.3. Expanded cooperation
Joint urban/military planning tends to serve as a catalyst for expanded cooperation. As urban/military cooperation is often predicated on infrastructural interdependence, it is also predicated on the converse interdependence of risk, that “water knows no boundaries,” a frame that easily expands to encompass additional jurisdictions. Expanded cooperation can occur as a result of spatial and/or governance arrangements. In other words, it may be a matter of simple adjacency, that a single installation borders two municipalities which then become involved in a joint planning process. Alternatively, installations that punctuate municipalities throughout a region are engaged in a single larger planning process in which municipalities become involved over time. The joint planning approach not only delivers on the rhetoric, but creates the institutional space for cooperation which can be further expanded. This occurred under disparate conditions, where municipalities tended to be both opposed to and amenable to cooperation with each other. In one case, an initial formal agreement seemed to raise the profile and prestige of municipal/military cooperation. In the incipient process, recognition of the relative power of local authorities spurred the military contingent to seek further cooperation.

2.3.4. Credible messenger
Climate security advocates trade on perceptions of the military as a stalwart institution with integrity to deploy it as a “credible messenger,” working to convey the urgency of adaptation for a right-leaning audience. Military credibility is based on perceptions of the military as science-based, fact-based, “clear-eyed”, and conservative in the sense of cautious; from this perspective, the institution could be useful for delivering any contentious message. While military leadership and farsightedness on climate are often overblown, the actual military stance does not have to be inflated to serve the climate advocacy purpose. At a minimum, the military acknowledges the reality and impacts of climate change, which is sufficient to broach the subject with skeptics. The military serves as a messenger at abstract and concrete as well as institutional and individual levels which reinforce each other; in social terms, the institution is a credible messenger in the abstract based on general perceptions of the military while individuals (expert champions) serve as specific embodied messengers based on their expertise and experience within the institution.

In spatial terms, the military serves as a credible messenger in abstract discussions about the existence and urgency of global climate threats, but also at the local level in relation to specific risks and concrete responses. While representing the military as an “apolitical” institution, climate security advocates unquestionably enroll the military as a political tool. However, using the military to convey a climate message, advocates do not limit the discussion to “national security” but address “human security” as well. The military as
“credible messenger” cannot be entirely decoupled from questions of the military as “credible model.” When champions take the next step of using the military as a model for addressing climate change, the relatively meager substance of military adaptation must be reckoned with.

Individual credible messengers facilitate this climate security project. These expert champions are capable of cultural code-switching between the military and civilian worlds. In addition to acting as a cultural bridge, they serve as connectors between scales and levels of governance in at least three interrelated ways: 1. between local/regional climate networks and the national climate security network, 2. between local military installations and local communities, 3. between urban/military collaborations (once they are formed) and the national climate security network. While these champions are adept at code-switching, they switch just enough, often referencing their military status to maintain the mantle of authority that confers. Invoking the climate message through their military affiliation, they help to create the impression of military leadership, elevating the military as “credible model” in spite of the lack of substance. In some instances, “outside champions” without military affiliation nonetheless identify and mobilize climate security as an influential message.

2.3.5 Credibility machine

These individual credible messengers are situated within the larger climate security project, or the whole configuration of proponents and agendas, that has explicitly, strategically compounded the credibility of climate action. The project first targets specialists and then leverages their commitment for a general audience. This began as a phased approach, as security professionals, many of whom had previously worked in the Pentagon, first reached out to retired officers to build credibility within the defense establishment; as retired officers became part of the project, together they deployed defense establishment buy-in toward building credibility with a broader audience of policy-makers and the public. Eventually, other climate advocates outside of the defense establishment built on the combined work of these security professionals and retired officers to also reach a broader audience. Over time, this credibility campaign has developed into a simultaneous, iterative process in which increasing credibility in one direction underwrites increasing credibility in others (Fig.2.9). Much of this circulation happens as a result of formal strategy, though informal, unplanned exchanges occur as well. Based on this foundation of climate change as a credible threat, specific forms and models of adaptation resonate between locations informing agendas, policies and plans across levels of governance.
Fig. 2.9 The climate security version of the credibility machine. Credibility is developed as security professionals develop legitimacy with retired defense personnel and together the two form a cohort that reaches active military personnel. They then build credibility with decision-makers and the public with the help of outside advocates.

2.4. Discussion: the promise of interdependence

Interdependence over islanding

As the discourse of interdependence gains traction on multiple levels, including within high level military policy, among climate security proponents, and on the ground among planning practitioners, this mode of thinking challenges several key propositions operative in theories of urban security. First, it challenges the proposition that urban security practices will foster enclaves. Rather than leading to the protection of infrastructure within a bounded area, at a minimum, the premise of interdependence extends the terrain of security to the networks that serve that bounded area. Plausibly, the interdependence extends much further as infrastructure is almost infinitely interconnected. In concrete terms, the initial focus for reinforcing interdependence might include a road or intersection close to an installation, but subsequent attempts could extend far beyond that. Clearly, the transportation, communication, power and water networks that sustain a base have a vast reach that defies adjacency.

Deepening the implications, the interdependence that is invoked is increasingly not just that of physical infrastructure, but community interdependence based on commercial, cultural, and familial connections. In this sense, installation and community cannot be meaningfully separated, further extending the expansive logic. The interconnections are not only extensive in geographic terms, but socioeconomic terms as every individual working on a base from junior enlisted to high-ranking officer and the civilian bureaucrats in between all have strong off-base ties. These infrastructural and community
extensions also relate to the multilevel nature of interdependence as overlapping types of governance from the sewage district to the state are implicated. Paradoxically, this counter to the predicted form of adaptation as enclave emerges from the military installation, itself the archetypal enclave.

That being said, even with this promotion of interdependence, differential protection, or the tendency to privilege high value places, will endure, whether for exclusively military or joint military/civilian locations. Hard protective infrastructure is one of the most likely routes to this. Armoring was raised as a distant concern in the San Diego region, but has also been flagged as a much more immediate concern for the Washington Navy Yard. This suggests the further risk that confidential plans may belie those pronounced in public as this proposal came to light through a Freedom of Information Act request (Flavelle, 2019). Any such moves almost certainly imply maladaptation, as hard infrastructure shifts vulnerability from one location to another. Further, any such decisions foreclose future decisions, potentially creating a “cycle of maladaptation.” Examples of maladaptation abound, but in this case, the spiraling demand, limited resources, and conflicts over “unintended consequences,” in the unfolding beach nourishment dilemmas in San Diego are a useful illustration (see Ch.4).

In addition to the enclave proposition, the means of pursuing interdependence challenge assumptions about the imposition of authoritarian solutions when the military is a party to planning. In this instance, as climate change and physical infrastructure remain a low priority for the military, the military serves a subsidiary role in joint planning arrangements. In addition, as joint planning occurs through civilian-defined and civilian-controlled planning instruments, joint planning will tend toward typical shades of consultation and partnership consistent with conventional planning practices. This is not to reject the possibility of authoritarian interventions into civilian planning if conditions deteriorate, but to suggest that current joint planning prospects seem to defy common critical interpretations.

Finally, the extent to which interdependence is being recognized as a material fact and mobilized as a discourse suggests that “defense-dependency” is an inadequate term to capture evolving modes of community/military relations. Even in locations where the community remains economically tied to the military presence, it fails to capture the complexities of the community/military relationship. But in places where the local growth machine is willing to disregard or even challenge military interests, the military may be more dependent on the community in some important ways. Even when the military recognition of interdependence only results in the basic instrumental pursuit of social license to operate, it can be of utility for the community.

**Urban lead/military ally**

Following from the last point, the shift in urban/military power dynamics tempers defense dependency as military leaders at multiple levels become more aware of their dependence on communities. In this case, cities do not wield the outsize leadership role often attributed to them, but urban decision-makers do act as initiators for joint urban/military planning. Though cities typically do not command the power and authority
to undertake adaptation alone, their role is essential to overcoming inertia in moving toward adaptation. As the analysis of “expert champions” demonstrates, it is not cities as such that are the actors, but prominent advocates within cities. In addition to a shifting political economic role in relation to the military stemming from physical and social interdependence, this role of initiator allows the urban contingent in the relationship a degree of power.

However, as the urban partners are often in the habit of kowtowing to military interests, they may overlook or fail to leverage this newfound influence. Recognizing this influence is key to mediating the relative weight of military versus community interests, but even more so to mediating the array of community interests. While it may be that urban decision-makers will only represent elite interests, disregarding a wider constituency, where there is an intent to plan with and for a wider base, that should be made possible through the leverage that acting as initiator confers. Planning through representation or participation, the urban contingent in the relationship becomes an arbiter for community interests, a role which they may either heed or disregard. This becomes especially critical when addressing the potential for maladaptation. Just as the climate security frame may be deployed toward privileging adaptation over mitigation, it can privilege certain conspicuous climate risks (such as sea level rise) over others that are more pervasive and more immediately damaging (such as heat stress).

Expanded cooperation
While defense-dependency and growth machine theories suggest that military largesse is a source of territorial competition, military interventions into adaptation planning can also be a source of expanded cooperation beyond the initial seed of urban/military cooperation. As mentioned above, this can occur through simple adjacency or involvement in larger planning processes. The fact that forms of expanded cooperation occur under the disparate conditions of urban/military relations in Norfolk and San Diego suggests a robust link. In other words, this can occur in cases where the community is compliant and accommodating of the military or where the community disregards and even challenges military interests. Critically, this can be a route to cooperation even within regions and among municipalities with a history of conflict.

Credible messenger
Within the adaptation literature, ineffective framing and a lack of “champions” or advocates for climate action are frequently cited as barriers. A key part of framing, aside from the message itself, is who or what constitutes a credible messenger. For cautious urban decision-makers, the military, commonly referenced as “trusted” and “clear-eyed,” fulfills this role. While there is some evidence that positioning the military as a messenger for climate change provokes backlash, this may hold true among the public more than among decision-makers, pointing to a disconnect that could benefit from further research. Equally, this raises question of what other institutions might be perceived similarly, or whether the military is unique in this status.

Achieving the status of “credible messenger,” but failing to fulfill the substance of a “credible model,” the military is not “hijacking sustainability,” but hesitantly
incorporating it, often under duress. Climate security advocates could be critiqued as the agents who are in fact “hijacking sustainability” on behalf of the military, but they distance themselves from sustainability discourse, and also add nuance and complexity to the security discussion. By frequently invoking forms of “human security,” they challenge prevalent critiques of the national security frame. Unsurprisingly, in policy documents issued by the DoD, the security framing adheres to conventional understandings of national security, defined by threats to territorial boundaries. But in debates in the security world beyond that, climate as a national security threat is far more capacious. While this could be grounds for further critique as national security appears to subsume other forms of security, conversely it suggests that the concept is leaky and open-ended. Analysis of the context seems to suggest that this interpretive space arises out of an authentically expanded scope of concern, or at least uncertainty and debate over the terms of concern, rather than a strategic effort to legitimize a core national security response.

Adopting a pragmatic framework to reflexively study the practice of security in context rather than adhering to abstract definitions of “good” and “bad” security, there is a value to the climate security project as it opens up spaces for dialogue, policy and practice. This elaborates on the position that there is pragmatic value in using national security to put climate change on the political agenda. The climate security project has achieved several openings: 1. Starting conversations between actors at multiple levels, 2. Attracting a general audience, 3. Providing a rationale for policy at multiple levels, 4. Providing a rationale for planning at the local level. These incipient moves do not allow for full evaluation of the ethics of climate security, but suggest that compared to a “no adaptation” baseline and accepting climate change as an imperative, there is some value to this framing. The impacts of this framing may subsequently be evaluated as “good” or “bad” depending on how it is deployed to serve various interests. Evaluating the climate security project as it unfolds serves a further pragmatic purpose, putting questions about whose interests it serves on the agenda for proponents, rather than assuming a priori negative consequences.

**Expert champions.** This individual credible messenger, capable of code-switching between the military and civilian worlds, could be understood in sociological or organizational terms, but here, what is of greater interest is the role of these champions in an intergovernmental context. The individual credible messenger, reflecting the credibility of the institution, is of most significance here. As these champions work through informal channels to secure attention to and resources for a particular city of interest or an entire class of cities (in this case, cities with a military presence) they are the leaders rather than the cities per se. As well established in urban theory, the simplification of personifying a city can lead to overlooking the actual agency attributable to particular actors. Significantly, these champions are not just operating within a city to boost a climate security agenda, but are facilitating access to other levels of government and promoting the agenda at higher levels to ultimately serve local needs. Cities, facing resources and capacity constraints, do not have the power to effectuate climate action on their own. But these actors have the access and power to turn the multilevel context into an opportunity rather than a constraint. They effectively operate at
multiple governance levels, ameliorating governmental fragmentation within certain channels, and thereby aggregate resources to overcome one of the key limitations to jurisdictions acting alone.

**Credibility machine**

Understanding the operation of the climate security project helps to expand and make more concrete the concept of multilevel governance. While some insist on the distinction between influence and governance, this becomes a less useful and meaningful distinction when a clear process of influence results in institutional outcomes at multiple levels of government. Elucidating an agenda that could otherwise be understood as nebulous and diffuse, simply “in the air,” this model ascribes agency to particular actors and also identifies how ideas move between levels and forms of governance, helping to explain the process of building authority and legitimacy within a multisector, multilevel network. Actors set out to create authority and legitimacy for the agenda with an understanding that buy-in from one set of actors would be insufficient to propel the mission forward. Given the role of belief, or credibility, in the climate realm, especially in the U.S., this effort was a strategic one with a far-reaching scope and consequences. The model provides a framework for understanding the project on its own terms with its specific consequences as well as how it compares to other climate projects (i.e. economic competitiveness, public health or faith-based stewardship) and their consequences. This model could be useful for understanding how other types of agendas are mobilized, though as the term credibility suggests, there is a unique role for marshaling “belief” regarding climate. As a result, this double effort may be more necessary to gain traction for a climate agenda.

2.5. Conclusion: urban/military alliance as opportunity

This study of urban/military collaboration for adaptation to climate change reveals that through the climate security project, urban leaders do leverage “back door” federal opportunities to successfully reinforce their own adaptation efforts and elevate a broader adaptation agenda. The main way in which this occurs is through recognition and promotion of interdependence over islanding, the material reality that communities and installations are inextricably intertwined socially and infrastructurally. This challenges several propositions in urban theory and has concomitant implications for adaptation practice: first and most importantly, it challenges the notion that urban adaptation will result in enclaves, instead revealing opportunities for communities and defense installations to breach the legal and material fenceline that divides them. This move, rather than the expected form of resiliency as survivalist self-sufficiency, indicates an unlikely route toward more inclusionary adaptation. Second, the civilian planning and policy routes through which this interdependence is manifest defy expectations that military aligned planning produces authoritarian solutions. Third, the underlying community/military relations complicate the concept of defense-dependency, suggesting significant recognition of military dependence on a community. Complicating and expanding prominent theories of exclusionary adaptation, these findings demonstrate the importance of looking beyond adaptation in the global North as a phenomenon rooted in global cities.
This key tenet of interdependence is supported and enhanced through four related findings. **1. Urban lead/military ally:** urban leaders initiate joint planning while military installations serve as allies, creating opportunities for the urban contingent to take ownership of the process. This suggests that while cities are not leaders per se, they do play a critical role in galvanizing adaptation and in their role as initiator, can bring influence to bear to serve community interests. **2. Expanded cooperation:** Joint urban/military planning tends to serve as a seed for additional intermunicipal cooperation, even in regions that did not have a tendency to cooperate; urban/military collaboration can help to overcome some well known obstacles to adaptation including framing and fragmentation. **3. Credible messenger:** the military serves as a credible messenger at an institutional and individual level. As wielded by individual “expert champions,” who bridge military and civilian cultures, climate security extends beyond typical notions of national security. As these champions also bridge governance levels, they overcome aspects of fragmentation to procure resources and capacity at the local level. **4. Credibility machine:** the compound strategy at work in the climate security project addresses the central role of belief in U.S. climate politics, demonstrating the machinations necessary to mobilize climate action for urban/military collaborations and beyond.

Security professionals emphasize that climate advocates should not be fooled, that climate is not a high priority for the military. When it comes to urban/military collaborations, that in itself is an opportunity. One could imagine that if this were a high priority for the military, responses could be far more exclusionary and authoritarian. Instead, when the military serves as ally, the urban contingent retains more power, and is in a position to take the lead. As these urban leaders play the critical role of leveraging outside resources to advance adaptation, it is up to them to go beyond recognizing interdependence to examine the power relations that are implicated, first between the urban and military contingents and second within the array of community interests at play in the local jurisdictions involved. The climate security message has already been demonstrated to be both powerful and malleable; it can be used to promote agendas tending toward maladaptation or tending toward inclusionary adaptation through incremental cooperation and aggregation of resources and capacity. At this point, there is some promise in the opening up of latent capacity and the creation of new capacity, but it remains to be seen whether the unfolding climate security project will ultimately be directed toward progressive ends.
CH. 3 NORFOLK: RECOGNIZING INTERDEPENDENCE

“Okay, now we know what the issues are, what’s the solution?” Can we find a win-win solution for the base and the city? We have a vested interest that the city be able to operate and continue to grow as well as the base has a vested interest to be able to continue to do our missions and our operations.”

~ Captain Joey Frantzen, Commander, Joint Expeditionary Base Little Creek-Fort Story

At this point, it is hard to imagine Hampton Roads without the military. Early colonists built a small fortification on the Virginia peninsula and other military facilities have accumulated since then, including the pre-Revolutionary War Norfolk Naval Shipyard. But in spite of a naturally deep harbor and strategic relationship to the capital, siting the largest navy base in the world there was not foreordained. Local boosters lobbied Congress for a full decade before securing the purchase of the former Jamestown Exposition grounds for a permanent navy base soon after U.S. entry into World War I. In this “marriage of convenience,” naval exertions of soft power have met with periods of municipal accommodation and breezy disregard, first from Norfolk, and later from Virginia Beach.

Increasing flood impacts and the need for adaptation planning emerged into the spotlight on the heels of another regional stressor, the Base Realignment and Closure (BRAC) round in 2005. With BRAC authority, the federal government demanded a suite of state and local land use measures to maintain Naval Air Station Oceana in Virginia Beach; municipal leaders in the region learned the hard way to disregard navy interests at their peril. However, as flooding from storms and “rain bombs” worsened, military installations and their host cities began to recognize their social and infrastructural interdependence. This motivation for their newfound collaboration was a departure from the military’s historical preference for enforcing development regulations to maintain fixed conditions on base.

Though recognizing interdependence was the most unique factor in their collaboration, it was supplemented by the pointed exertions of adaptation champions and more diffuse efforts at framing flooding. In conjunction with these strong drivers of collaboration, there have been several major obstacles important to the urban/military context. These include lack of authority across the fenceline (the boundary between military and civilian jurisdictions), discontinuities in military leadership and regional fragmentation. The latter is clearly a key obstacle in every regional planning context, but is central in Hampton Roads and has repercussions for the urban/military relationship. In spite of and at times because of these obstacles, stakeholders have collaborated in multiple joint planning processes through several mechanisms: building effective staff relationships, sharing data, agreeing on decision-making frameworks and seeking legal authority across the fenceline.

As a result of joint urban/military planning, the cities of Norfolk and Virginia Beach have realized some gains in their adaptation planning, including the very fact of their
cooperation in spite of a history of antagonism and a more comprehensive assessment of their critical infrastructure. However, pervasive inequality and political divisions temper these gains. As in many adaptation planning processes, recommendations are biased toward routing resources to high value assets rather than vulnerable populations. And the strategic approach to framing adaptation fails to overcome political sensitivities around mitigation. Though the cities of Norfolk and Virginia Beach are adaptation leaders in some respects, even with the addition of soft and hard military resources, their resilience rests on shaky ground.

3.1. A history of defense dependency and regional tensions

3.1.1. Norfolk and the Navy: a colonial connection
Taking a quick glance at Norfolk Naval Station on the map, it would be understandable to assume that the decision to locate it at the mouth of the Chesapeake over 100 years ago was an obvious strategic choice. But the early 20th century siting of what was to become the largest naval station in the world was by no means a foregone conclusion. Instead, it was a result of local boosterism, a case study in “growth machine” politics (Logan & Molotch, 2007; Molotch, 1976). At the onset of World War I, local leaders built the case to convince the federal government that Norfolk did offer a uniquely strategic location, but in fact, they were seeking economic development for the fallow land of the 1907 Jamestown Exposition (Curtin, 1967; Silver, 1984) (Fig.3.1).

Fig. 3.1 The Jamestown Exposition Site in 1917 when it was taken over by the U.S. Navy. Courtesy Naval History and Heritage Command.
The fact that the Norfolk contingent did win out in this industrial age competition went on to shape the city for the century to come. As historian Roger Lotchin argues, Norfolk became a prototypical “martial metropolis” or a city in which the economy, institutions, and morphology are largely shaped by the relationship with the U.S. military (Lotchin, 1984). Within this relationship, certain persistent dynamics emerged early on. During World War I, the city was unable to supply adequate water to the naval base so the commander threatened to pull out. The city underwrote a suite of modernizations to satisfy naval needs, supplying new sewers, street paving, a new market and schools (Silver, 1984). In what would become a prevalent pattern, the city kowtowed to this infrastructural imperative, investing heavily in retaining the navy. In an attempt to head off future threats, the city designated the chamber of commerce as a liaison between the city and military, formalizing a route for accommodating the navy. This rush to satisfy navy demands would contribute to a pattern of defense dependency, the tendency for some urban areas to rely on military dollars to sustain their economy, to their long-term detriment (A. R. Markusen & Yudken, 1992). Historian Christopher Silver goes so far as to diagnose a “colonial connection” between Norfolk and the federal government.

Over time, investment went both ways with the navy investing in some local urban development. During the build up for World War II, the commander of the naval station built a housing development adjacent to the navy yard to address a housing shortage. The city responded in kind, forming the Norfolk Housing Authority because “public housing was a defense measure (Silver, 1984, p. 121).” In both of these cases, the World War I era infrastructure provision, and World War II era housing provision, benefits did not only accrue to the navy, but some of the surrounding population as well. After World War II, a political consensus emerged favoring the urban/military interdependence that served as the bedrock of the regional economy. Since then, subservience to navy demands has waxed and waned. At times, city and regional leaders have explicitly challenged the consensus through various initiatives for economic diversification, but without any real traction (Fuller, 2016; Koch, 2015). However, Norfolk leaders have consistently sought to attract defense installations, commands, and industries to maintain the city’s economic base. In broad strokes, the early opportunistic pitch for the naval station to locate in Norfolk transformed into long-term economic strategy (Fig.3.2).
The City of Norfolk celebrated the 100th anniversary of the Navy’s arrival in 1917 with a year of commemorative events. Banners proclaiming “Norfolk, Navy Proud” adorned major thoroughfares and signs such as this one in front of City Hall dotted the city. Photo by author.

3.1.2. Regional divisions

The Hampton Roads region, named for a large natural harbor emptying into the Chesapeake Bay, is somewhat unique among American urban regions of its size. It lacks a clearly dominant central city. Though Norfolk comprises the urban core in age, building stock, and urban morphology, the surrounding cities, many of them much younger, contest its centrality to regional economics and politics. In many comparably aged cities along the Eastern seaboard, though there may be some resentment from surrounding municipalities, there’s a reluctant acknowledgement of central city dominance. To some extent, the Norfolk situation can be explained by differences in demographics, urban form, and geography. While Norfolk and neighboring Portsmouth retain some of the fabric from their colonial and early industrial histories, many of the surrounding municipalities arose in the post-World War II era of suburban expansion.

This physical relationship is the case in most cities with a strong core/periphery form of development, yet in this case Norfolk lacks the size, resources and political means to maintain its position at the top of the metropolitan hierarchy. Exacerbating the situation, regional politics are dominated to an unusual extent by local self-interest. This fragmented condition is at least partially due to the way in which municipal identity reflects geographical position. South Hampton Roads or “the Southside” and the Virginia Peninsula (referred to locally as “the Peninsula”) on the north side are separated by extensive bridge and tunnel systems spanning the wide harbor; residents and local politicians adhere to identities based on their separate sides (Fig.3.3).
3.1.3. Norfolk/Virginia Beach tensions
The cities of Norfolk and Virginia Beach, though adjacent to each other on the Southside, have a history of antagonism embodying many of the key regional conflicts. The statewide battle over school desegregation played out in extreme form locally. In 1956, U.S. Senator Harry F. Byrd, Sr., leader of the segregationist Byrd Organization, declared a formal Virginia policy of “massive resistance” to school integration. In 1958, Norfolk was one of four localities in Virginia where the governor, James Almond Jr., refused to allow schools to open for the school year under integration orders. Meanwhile, the state had approved the use of public funds for white children to attend private schools or “segregation academies” rather than integrated public schools. Since then, there has been a stark racial divide between public and private schools in the region (Littlejohn & Ford, 2012; White, 1992). As in most American cities, these tectonic forces have had a lasting
impact; the legacy of this and related local battles endure in the friction between Norfolk and Virginia Beach.

The bitter school desegregation fight was inextricably linked with other archetypal forces of twentieth century American urbanism, urban renewal, white flight and suburban expansion. Since the late nineteenth century, Virginia Beach had been a small seaside town, slowly growing as a vacation destination. After World War II, even though the town was left with four military installations, the population had doubled, but remained just over 5,000. However, from 1960 to 1970, the population leapt from 8,000 to 172,000. Some of this population growth (76,000 people) occurred overnight as Virginia Beach merged with the much larger area of surrounding Princess Anne County, but the remaining growth occurred as the enlarged Virginia Beach became a favored suburban destination (Fig.3.4).

This municipal consolidation was another symptom of the racial tensions between core and periphery. Politicians in Virginia Beach and Princess Anne County proposed the consolidation exclusively to obstruct further annexations by the City of Norfolk with its large African-American population. Virginia Beach had been dependent on Norfolk for the municipal water supply so the Norfolk City Council voted to cut off water service in the event of a merger. In spite of this threat, the Virginia Beach City Council and Princess Anne Board of Supervisors approved their merger at the end of 1961, and it then passed overwhelmingly in a public referendum in 1962 (Eighmey, 1976; Kamm, 2017; Temple, 1972). Though Norfolk did not immediately cut off the water supply, Virginia Beach secured their own supply from Lake Gaston which is now piped to and treated in Norfolk. For local decision-makers, and certainly the residents who lived through it, this history of conflicts over school integration and municipal annexation is still very present. Emphasizing the lasting bad blood from the annexation struggle, a senior City of Virginia Beach staff member commented, “We joked that we still need a number of funerals to occur before we’ll get over that (Matthias Interview).”
Fig. 3.4 The merger of Virginia Beach and Princess Anne County vastly increased the City of Virginia Beach’s land area, laying the foundation for exponential growth. By Sham Sthankiya, based on maps in “Merger Politics,” Temple, 1972.

With even brief exposure to local politics, it becomes clear that major differences and conflicts persist between the neighboring municipalities. And a quick statistical snapshot reveals stark differences. In Norfolk, the poverty rate is 21% while in Virginia Beach, it is only 8%. In Norfolk, the median income is $45,000 compared to $71,000 in Virginia Beach. Before school integration, Virginia Beach had only a tiny fraction of the population of Norfolk, but now it is almost twice as big at 452,602 people, making it the largest city in the state. Virginia Beach has an African-American population of 20% while Norfolk is a “majority minority” city with a 45% African-American population (“Data USA: Virginia Beach, VA and Norfolk, VA,” n.d.).
Since state-sponsored segregation resulted in white private schools in the late 1950s, racial divisions have persisted between private and public schools. This has remained an important issue in local politics, now a headline issue along with resilience (Mclellan Interview). The Norfolk public schools have been under-resourced since white flight and the resulting deterioration is now used as further justification for siphoning resources (Littlejohn & Ford, 2012). The low performing Norfolk schools have even been cited as a reason to avoid more authoritative regional government on the questionable theory that regional government would involve a merger of school districts (Matthias Interview). This is just one angle for widespread resistance to regional government with any form of authority (see Sec. 3.3.3).

Two recent development conflicts seem relatively minor, but are emblematic of the ongoing tension between the neighboring municipalities. There have been efforts to introduce public transportation between Norfolk and Virginia Beach since the 1950s, but they have been unsuccessful each time (Eighmey, 1976). In the latest iteration in 2016, the proposal to extend the newly developed Norfolk lightrail line to Virginia Beach failed in a referendum after an effective grassroots campaign (Pascale, 2016). Concern about lightrail was so strong that the ballot measure received as many voters’ attention as the Trump/Clinton presidential decision. This was not a rebuff to infrastructure, just regionalism. Some voters viewed investing in a lightrail connection as a tradeoff with local stormwater improvements and voted according to the slogan, “drains, not trains.” In another intermunicipal squabble, when the City of Norfolk sought to locate a new outlet mall on the border with Virginia Beach, original plans included an access road from the Virginia Beach side. However, the Virginia Beach City Council voted against the access road, responding to concerns about siphoning business from the central business district and increasing local traffic. Like the lightrail vote, supporters perceived the vote against cooperating on the outlet mall as a vote against regionalism (Kleiner, 2015).

While all of these conflicts, from school integration through annexation, water service to lightrail, could serve as textbook examples in any study of metropolitan fragmentation, they are salient here because of their ongoing impact on the politics of adaptation. Each issue arose multiple times in conversations with local decision-makers, suggesting that the repercussions still resonate in discussions of flood protection and shape the contours of possible solutions.

### 3.2. Recent development dynamics: deference to military needs

In spite of an overarching tone of defense dependency, at a more granular scale, the relationship between the military and communities has been an ongoing negotiated process. In recent years, there has been a tendency toward concession to military interests, which sets the stage for the political dynamics surrounding current adaptation planning. Recommendations from the Base Realignment and Closure (BRAC) Commission of 2005 resulted in the closure of one major installation in the region and a close call for another. The local and regional response to this altered the tenor of urban/military planning from frequent disregard for military interests to a propensity for compliance.
The decision-making process for land use and infrastructure planning reveals that potential base closure, and the attendant risk to the economy, remains a primary influence on urban/military relations. Two other factors also noticeably influence urban/military relations with consequences for planning. First, urban and military stakeholders must frequently address minor conflicts and potential co-benefits in daily operations that arise from their proximity, ranging from noise to storm water drainage to emergency services. Second, military and civilian life intersect in the professional and community realms: networks of leaders coalesce out of the common trajectory from military to civilian leadership and interaction between military and civilian residents pervades community life.

3.2.1. BRAC and the reshaping of local land use and institutions
The most significant recent driver of interaction has been the 2005 Base Realignment and Closure (BRAC) Commission. This was the fifth (and currently last) post-Cold War military streamlining proposal. Each BRAC Commission report entailed an extensive assessment of installations’ current utility and a resulting recommendation of bases to be closed and/or consolidated. Multiple BRAC rounds are evident in merged bases across the U.S. which operate under the name “joint base” even though they may not be geographically contiguous; these mergers have ostensibly achieved administrative efficiency. More importantly, a huge number of bases have been closed, often leaving economic devastation in their wake as defense-dependent communities have been stripped of their economic foundation. These obvious economic repercussions created a new line of work for the Office of Economic Adjustment (OEA), a Department of Defense organization originally formed in 1961. The OEA is tasked with assisting communities to re-orient their development after defense changes, as well as facilitating community engagement and planning with local military installations to mediate “encroachment” into the mission.

When the 2005 BRAC recommendations were released, “we in Hampton Roads kind of learned the hard way that it’s better to keep the military informed on some things,” recounted Ben McFarlane, the senior regional planner for the Hampton Roads Planning District Commission (HRPDC) (McFarlane Interview). Fort Monroe, a massive two-century-old bastion fort in the small Peninsula city of Hampton, was slated for closure. This surprising development was a “wake-up call” for the Hampton City Council. According to Bruce Sturk, the Hampton Director of Federal Facilities Support whose position was created as a result of the BRAC round, they learned that the existing social relationships with base leadership were insufficient for the city to stay apprised of developments. (Sturk Interview). The resulting closure had a major economic impact which Sturk reported as an annual net loss of $23 million, or 7%, of the city’s operating budget. He further estimates that “in any BRAC closure, it takes 20 to 30 years to see that resurgence” of economic development. Even if BRAC impacts are not this dire over the long term, his estimate reveals the overriding economic anxiety attendant on a BRAC threat.
Naval Air Station Oceana, the East Coast Master Jet Base,\textsuperscript{10} and one of two major installations in Virginia Beach, was also threatened with closure in the 2005 BRAC recommendations. According to Bob Matthias, Assistant City Manager for Intergovernmental Relations, this represented a major turning point in local development politics. Matthias, a repository of institutional history, has been operating between the state assembly in Richmond and Virginia Beach since 1985. Before the 2005 BRAC threat, the pro-development Virginia Beach City Council would easily disregard Navy input on development decisions. And in many cases, Navy leadership would tacitly condone this approach: “If we had a zoning request, the Navy would say, ‘Hey, we're opposed to it but wink-wink-nod-nod it's okay.’ If it were a minor thing they would say, ‘We had to be officially opposed to it, but wink-wink-nod-nod.’ Now, if they sent the base commander over and he sat in the front row with his white uniform on, we’d know it was something serious so they’d get up and sometimes the city council would listen to them, sometimes they wouldn’t.”

He suggests that the decision to issue a permit for the Lynnhaven Shopping Center in the 1960s was representative of the city’s glib disregard for navy preferences. “The base commander came out and told the city council that he and the Navy were opposed to the shopping center being constructed and he would never allow his wife to go shopping there. Well, that tells you something about the time. That was built over the Navy’s objection, but again Virginia is a very strong property rights state. At the time, the city council never saw a development they didn’t like. They were approving a lot of development in and around Oceana (Matthias Interview).”

The development that the city council so eagerly approved for decades facilitated massive growth in Virginia Beach but also began to compromise Oceana’s functionality as more and more buildings encroached on naval air space and crash zones; this was one of the major reasons that the BRAC Commission slated Oceana for closure, reassigning all of the assets to Cecil Field in Jacksonville, Florida. The Commission was unequivocal in its criticism of the conditions around Oceana: “The long-standing and steadily worsening encroachment problem around NAS Oceana, without strong support from state and city governments to eliminate current and arrest future encroachment, will in the long term create a situation where the military value of NAS Oceana will be unacceptably degraded (BRAC Commission, 2005, p. Q-94).” Given constant competition between states for defense dollars, the threat of relocation to a rival state made the prospect of closure even more objectionable.

The Commission went on to outline onerous terms for the continued operation of the base. Most land use law falls under local jurisdiction through powers granted by the state in vehicles such as Zoning Enabling Acts. However, in 2003, Congress authorized the federal government to limit development and use of property that is incompatible with

\textsuperscript{10} According to the 2005 Hampton Roads Joint Land Use Study, a Master Jet Base is “a location with permanent basing and homeporting of carrier air groups, and the provision of one or more auxiliary landing fields for their use.”
the mission of an adjacent military installation\textsuperscript{11}. This authority gave the BRAC Commission the power to make numerous enforceable requests of the Commonwealth of Virginia, cities of Virginia Beach and neighboring Chesapeake, all within a tight six month deadline (City of Virginia Beach, 2007):

- enact zoning controls for discretionary development decisions in certain noise level zones, consistent with Air Installation Compatibility Use Zone (AICUZ) guidelines\textsuperscript{12}
- establish and fund a program of at least $15 million annually to condemn and purchase incompatible use properties
- codify the 2005 Hampton Roads Joint Land Use Study (JLUS)\textsuperscript{13} recommendations
- evaluate the rezoning of undeveloped properties in certain noise level zones
- purchase development rights for property between Oceana and Fentriss, the auxiliary landing field
- create an Oceana-Fentress Advisory Council

In response, the Virginia General Assembly enacted legislation requiring the cities to comply with these requirements and further requiring any locality housing a Master Jet Base to address incompatible property uses. Under the force of this legislation and threatened with the loss of 23,500 jobs (according to the BRAC Commission’s own official tally) the City of Virginia Beach enacted a suite of local land use regulations in early 2006, ultimately downzoning approximately a third of their land in order to preserve Oceana (Matthias Interview) (Fig.3.5). For most cities with any growth potential, this would have been an outrageous concession. Downzoning on such a large scale embedded a singular devotion to a particular form of growth. A new Air Installation Compatible Use Zone (AICUZ) Overlay Ordinance included stipulations such as approving “the least density . . . that is reasonable.”

Within the loudest zones (greater than 75 decibels), residential density was limited to one dwelling unit per fifteen acres of developable land, far lower than even a far-flung exurb. Resort Area Ordinances also served to decrease density, resulting in a reduction of 7,000 dwelling units below what the zoning would have previously permitted. To further reduce density, the city acquired property with newfound “incompatible uses.” For example, the city would purchase a lot with a single-family house but zoned for a duplex in order to prevent future development at the higher density (City of Virginia Beach, 2007). As Matthias quipped, “We buy high and sell low. The Navy likes that.” In addition, the City and Navy entered into a Memorandum of Understanding to jointly review and make

\textsuperscript{11} In the 2003 National Defense Authorization Act, 10 U.S. Code Sec. 2684a
\textsuperscript{12} The Department of Defense developed the AICUZ program to address development in zones affected by noise and potential accidents around military air installations. Generally residential and high-density commercial uses are prohibited.
\textsuperscript{13} Joint Land Use Studies are comprehensive strategic plans initiated by military department nomination (i.e. Department of the Navy) to address incompatible civilian development around an installation and promote long-term operability of the military mission (OEA).
recommendations to the Planning Commission and City Council for proposed developments within the air installation zones.

**Fig. 3.5** In the 6th Progress Report of the Naval Air Station Oceana Encroachment Reduction Program, the City of Virginia Beach touts the reduction of residential and business units in the accident potential zone or “crash zone” surrounding the base.

This downzoning was not merely a numbers game with the city trading in theoretical dwelling units for an alternative economic upside. The change in land use policy also had a tangible impact on local communities. Oceana was initially built near Seatack, one of the oldest African-American communities in the country; as a result, the community was within Oceana’s crash and loud noise zone. The ordinances stemming from BRAC meant that much of Seatack’s residential property was rezoned for industrial and commercial uses. As an influx of compatible uses such as self-storage devalues the homes, long time residents fear that the community is disappearing (Skelton, 2017).

This level of concession was a major reversal for a city that had previously disregarded navy preferences. In essence, under duress, city leaders sacrificed much of their potential property tax base and other commercial revenue streams; instead they staked their future economic vitality on a continued navy presence which they had just learned was precarious. The newfound commitment to cooperation for the sake of preserving the Navy is neatly encapsulated in the resulting initiative, “YesOceana,” billed as a win-win partnership “to preserve our way of life.” The website boasts “to move Virginia Beach business in the right direction, we joined the Navy” (Virginia Beach Economic Development, n.d.). Under this rubric, the Oceana Land Use Conformity Program went above and beyond BRAC requirements, with further zoning, tax, and economic development incentives to redress incompatible development.

Having taken these drastic steps, the city appeared to be fully committed to a future of defense dependency. The state legislation and local land use regulations involved federal pre-emption of state and local authority. The city and state clearly complied with the BRAC requirements under duress as the loss of Oceana to the local economy was too
large to risk. City leaders determined that their self-interest was aligned with defense interests to the extent that it was worth sacrificing alternative development options. In retrospect, both community and military leaders discuss the economic impacts in matter of fact terms. Barry Frankenfield, the Virginia Beach Planning Director remarked, “Clearly, we understand that the defense industry is literally 45% of our economy, so we need to make sure that the defense industry is comfortable in Virginia Beach, that there are great places to live and have children go to school, and shop and feel safe.” Even while being cautious from a public relations perspective, Captain Dean Vanderley, the commanding officer of Navy Facilities Engineering Command (NAVFAC) Mid-Atlantic from 2016-201814, offered: “The Navy is a huge economic driver for these areas, so the communities are very interested in insuring that their development is compatible with the navy's mission . . . Oceana at one point was getting close to getting BRACed out of here because of encroachment problems which would have been a huge economic hit to this area.”

The 2005 BRAC threat had a lasting impact on the region. The most tangible effect was the rapid change to the physical fabric of Virginia Beach. Though the land use ordinances might be changed in the future, in the medium-term, they codify that large swathes of private property will accommodate defense uses to the maximum extent possible. Locking in such a low-density form of urbanism, they preclude a host of future opportunities.

In addition to these changes to the built environment, Virginia Beach and other localities implemented institutional changes. While Virginia Beach already had the staff position of intergovernmental liaison before the 2005 BRAC round, the city initiated a new focus on quarterly meetings with base staff and leadership in order to head off any emerging issues. As Captain Joey Frantzen, the Commander of Joint Expeditionary Base Little Creek-Fort Story related, “When Naval Air Station Oceana was listed for BRAC . . . . The city was caught off-guard and because of that, they said: ‘Hey we need to have a relationship. We need to understand so that what they are doing doesn’t impact the base such that it doesn’t become viable for a military organization to stay there.’ . . . It’s like anything, if you have a good relationship and you are talking, you generally can come up with good solutions for both people.” This proactive attempt to create ostensibly win-win solutions has been replicated elsewhere as other localities including Norfolk have created liaison positions and formalized their working relationship with resident installations.

Virginia Beach leaders’ aggressive re-shaping of their built environment as well as their formalized relationships with the base have served the local interest in retaining their two major military installations. Perhaps with more far-reaching effects, mayors in Hampton Roads also decided to form a new regional institution to represent their collective interests as a direct result of the BRAC threat. The Hampton Roads Military and Federal Facilities Alliance (HRMFFA) was incorporated in March 2006, the deadline for compliance with the BRAC orders. Since then, the director has influenced policy at all

14 Commanding Officers (COs) typically rotate every two to three years, so throughout the text, multiple officers are referred to as the CO of a given installation.
levels of government, seeking to align local services and infrastructure with the needs of the entire range of military missions in the region (Fig. 3.5). The organization also retains lobbyists in DC to shape legislation to the benefit of the Hampton Roads economy.

Fig. 3.6 The Hampton Roads Military and Federal Facilities Alliance (HRMFFA), formed in response to the 2005 BRAC round, represents the large range of Department of Defense and other federal facilities in the region. Source: HRMFFA.

HRMFFA Director, Craig Quigley emphasized the organizations’ comprehensive approach to retaining the military base of the regional economy: “We will play both offense and defense, we'll defend what we have and we will work very hard to bring other things here . . . once you are here, we want to help you grow and prosper and if there are any barriers to you doing your job, whatever that job might be, we would do anything in our power to remove that barrier whether it's the quality of the public school system which is something we’ve spent some time on recently or local transportation issues, encroachment of any kind whether it's in the electromagnetic spectrum or development or aviation, airlines, any sort of encroachment if that is a impingement on your mission we’ll work to roll that back.” As his comments suggest, the HRMFFA remit is extensive, reaching into housing, transportation and schools. While military influence in all of these essential community goods may arguably have some benefits, such as financial support from the Department of Defense for STEM education, just as in the case of Virginia Beach’s downzoning, it may also lead to questionable sacrifices of local autonomy and culture. Putting the military first may align with a generalized notion of
regional interests, but does not necessarily serve particular community interests.

3.2.2. The Perpetual BRAC threat: continuing military influence on local land use and infrastructure

Since the 2005 BRAC round which involved the decommissioning of Fort Monroe in Hampton, and the prospect of losing Naval Air Station Oceana in Virginia Beach, a future BRAC round has remained an instrumental threat, consistently cropping up in local and regional decision-making. In Virginia Beach, a clear shift occurred in the tenor of urban/military interactions over development decisions. The city changed course from breezy dismissal of navy concerns to deferential accommodation when their apparent economic lifeline was threatened. And the city did more than accommodate. In several ways they exceeded BRAC requirements, downzoning in the extreme, and forming additional institutions to maintain local compliance with military needs. Subsequently, the BRAC threat has influenced planning decisions at every scale from local land use at the parcel level to long-term regional infrastructure planning.

Local development decisions

This attitude, most readily apparent in the early 2006 round of Virginia Beach land use ordinances, has continued to infuse subsequent development dynamics and decisions. In accordance with policy stemming from the Posse Comitatus Act, and more generally, civilian control of the military, navy leaders regularly insist that they do not seek influence over local decisions. The Act forbids the Army and Air Force from “executing the laws” and this provision has been extended to other service branches through DoD policy. However, local perceptions as well as the official record add up to suggest a more complicated picture. Local politics departs from policy, with the navy frequently exerting pressure backed up by the BRAC threat.

In one example, a planner from one of the municipalities in the region recounts what he perceives to be a common Navy approach in current interactions, in which Navy officials begin an interaction by seeming to politely express a preference but eventually demand compliance. For a residential rezoning application in Chesapeake in one of the high decibel AICUZ zones, the Navy submitted comments to the City Council suggesting that they were not officially taking a stand, but did not think the development would fit their mission. After the City Council approved it, the Commanding Officer of the affected base made it clear that the City Council had not accurately read between the lines; in effect, the Navy “pulled rank” requiring that the application be denied.

Another instance of decision reversal occurred in Chesapeake in 2013 after the City Council approved a residential subdivision near Fentress, the auxiliary landing field for Oceana. A rezoning would have allowed 31 homes to be built near the airfield, but immediately after it was passed, the Navy made it clear that their opposition to the development was more than an opinion to be taken under advisement. Councilman Scott Matheson explained how he reconsidered his vote. “We now understand the huge implications of putting any ammunition into the hands of a reconstituted BRAC. We cannot take that risk. It will hurt all of us in this city; it will hurt everybody in this region.” In spite of this consensus of ultimate deference, one Councilman, Rick West,
took exception to the agreement between the Navy and the city, suggesting that this infringement of property rights was a case of the Navy taking away “our freedoms,” rather than protecting them (Rostami, 2013).

The local planner further relates that the Navy exerts authority over development decisions in special zones around the airfields, though he allows that this is understandable given the risk of plane crashes. Citing a conflict over a deed restriction preventing large crowds on a property where two veterans built a brewery, he notes that the Fentress and Oceana leadership do express what adjacent cities can and cannot do; sometimes this is within their authority based on the AICUZ zones, but they also exert authority unofficially. In that case, the veterans who owned the brewery ran afoul of a Navy easement severely restricting retail sales dating to the 1980s. The owners judged the Navy’s interpretation to be overly broad, going so far as to forbid food trucks on the property, which unfairly disadvantaged their business versus other breweries (Graves, 2016; Gregory, 2016; Meadows, 2016). In that case, a Navy spokesperson asserted that the Navy was fully within their rights in interpreting the U.S. Government’s authority over development on that property.

Accustomed to this type of compliance, Navy personnel have at times misunderstood the extent of municipal authority over property within their jurisdiction. Meg Pittenger, Environmental Manager at the City of Portsmouth, recounts the Planning Director’s experience dealing with Naval Facilities Engineering Command (NAVFAC): “there were trees in the backyard of these houses that would be on the Chamber’s Field and the Navy kept trying to tell the city, ‘You need to tell those people to cut their trees down or you need to go cut their trees down because they're within our glide slope.’ The city doesn’t have the authority just because it's within your accident zone, to do that.”

While these are minor development conflicts that each only alter the regions’ built fabric in small ways, in aggregate, they have a noticeable physical impact and set a precedent for what is considered successful local land use policy in the region. Craig Quigley, the Director of HRMFFA, noted that both the City of Hampton and the City of Chesapeake have learned from Virginia Beach’s example and purchased properties from willing sellers to reduce encroachment around Navy and Air Force installations. More significantly, the minor conflicts and decisions reveal the pressure within the decision-making environment which extends to much larger regional infrastructure planning as well.

**Regional infrastructure**

The Hampton Roads Transportation Planning Organization (HRTPO) is the regions’ Metropolitan Planning Organization (MPO), created to fulfill a federal requirement for comprehensive transportation planning in urbanized areas. Their mandate is broad: it encompasses supporting the economic vitality, safety, security, and resilience of the transportation system through long-range comprehensive planning. Unsurprisingly, their Citizens Guide to Transportation Planning acknowledges the significant role of military installations to the regional economic base, but also notes the importance of shipping, technology, tourism, manufacturing and other industries (Hampton Roads Transportation Planning Organization, 2017).
Planning Organization, 2017). For the HRTPO, military interests are just one set among many competing priorities for an organization in which resources are stretched thin (Belfield Interview).

But in light of the military’s prominence, as of 2009, the HRTPO started making a concerted effort to include military stakeholders in regional transportation planning. Given this opportunity, military representatives made the case that traffic congestion presented a three-fold problem for the military and by extension the regional economy. First, it undermined operational readiness, but it also detracted from service members’ likelihood to choose the region as a desirable location for additional tours of duty or retirement. As usual, the biggest risk from failing to resolve congestion was not the slow attrition likely as individuals sought more convenient locations, but large-scale relocation. According to Senior Transportation Engineer Sam Belfield, the HRTPO was cognizant of the BRAC risk even as they heard seemingly quotidian complaints about congestion. “They were concerned about safety of the roadways, . . . whether it’s fatalities and injuries due to congestion and things like that. They just wanted to make our board more aware that it was a concern. Our board, they certainly don’t want to lose the military and there was some talk about them potentially moving some of their installations down to Florida. We wanted to do something about it to address their specific concerns. That’s why we created this Military Transportation Needs Study (Fig.3.7).”

![Fig.3.7 Excerpt from the map “Potential Submergence of Roadways Serving the Military – Hampton Roads Southside” prepared by HRTPO in 2013 as part of the Military Transportation Needs Study.](image)

In military representatives’ oral and written statements to the HRTPO Board, it becomes clear that the board’s interpretation was well-founded. The statements are instructive regarding military attitudes toward the appropriate level of consideration due to military needs in regional planning in spite of the prohibition on military influence. In general, they agree that it is appropriate for regional planning to serve military needs, though their stance over the appropriate character of urban/military relations is slightly more
conflicted. Civilian leaders at the regional and state level reinforce the unsurprising military bias toward serving their own interests, deeming compromised military readiness an unacceptable risk to the economy. This position is analogous to state and municipal responses to the 2005 BRAC threat.

In a letter to the Virginia Department of Transportation, Captain M.M. Jackson, the Commanding Officer of Naval Station Norfolk clearly expressed that public infrastructure and institutions should serve Navy interests: “Navy leadership in Hampton Roads is on record stating that public transportation systems are a military readiness issue. To that end, we will continue to encourage local, state and regional efforts to identify solutions that reduce congestion for military commuters, increase capacity for access to and from Hampton Roads, and enhance safety and quality of life for the 100,000+ military, civilian, and contract personnel that support the Navy mission in the Hampton Roads Fleet concentration area (Hampton Roads Transportation Planning Organization, 2011, p. 80).” Even when it comes to safety and quality of life, he doesn’t bother to couch his message as concern for all the residents of the region. Giving input as part of the Hampton Roads Military and Federal Facilities Alliance (HRMFFA) delegation, Aubrey Layne of the Commonwealth Transportation Board exposes the consequences of ignoring this message. He lays out a stark zero sum picture. “The region’s competitors could use the disadvantages of the Hampton Roads area to their advantage, not only targeting potential assets, but possible current assets (Hampton Roads Transportation Planning Organization, 2011, p. 76).”

Regional Commander Rear Admiral Mark Boensel supported the forceful Navy approach, but noted a caveat that regional politics complicated the Navy’s appeal for improved infrastructure. “The Navy would like to make a consolidated and unified effort to improve transportation in Hampton Roads, but . . . cannot . . . put one municipality’s interests over another (Hampton Roads Transportation Planning Organization, 2011, p. 74).” Belfield affirmed the notion that military representatives are sensitive to putting their thumb on the scale in regional politics: “they don't want to show favoritism when they're trying to pick projects because it's a sensitive issue, it's very political. For them to say, ‘Well, we want this tunnel built over this tunnel.’ They can say that, ‘this facility might serve us better.’ But they have to be really careful about choosing because they don't want to upset any of the local leaders in the region.” In spite of the precaution that military liaisons participate on the board as non-voting members, they had the sway to cause a significant allocation of resources to a study that would serve their needs. Further, the deficiencies identified in this study have informed regional transportation planning priorities, so in spite of this stated reluctance to explicitly influence decisions, military needs are influencing construction and maintenance priorities.

3.2.3. Everyday interactions
One of the main missions of the Office of Economic Adjustment is to facilitate “compatible development” between communities and neighboring military installations. In their corporate documentation, the director describes this as a two way street whereby communities and the military work together to ensure “civilian development is compatible with the ongoing DoD missions” and that “operational effects” on
surrounding communities are minimized (Office of Economic Adjustment, 2005). This compatibility has increasingly become an issue as installations originally located in the hinterland have been surrounded by urban development. As practicing planner Paul Holland documents in his history of encroachment planning, the nature of these joint efforts has evolved far beyond the post-World War II imposition, “pardon our noise, it’s the sound of freedom (Holland, 2017).”

As the veteran population has declined and the U.S. Military has become an all-volunteer force, installations have had to make a greater effort to foster goodwill with surrounding communities. While there may be less automatic sympathy for the military mission, good relationships can serve as a recruitment tool and further the mission (Interviews). Multiple branches of the military have responded to this need by creating a position with the explicit role of bridging the installation fenceline through planning and stakeholder engagement. In the Navy, this position is the Community Planning Liaison Officer (CPLO) situated at every base and every regional command.  

From jets and shooting ranges, noise is one of the most common points of contention between neighboring communities and installations. Mercedes Holland, the CPLO for Joint Base Little Creek-Fort Story, emphasizes that installation leaders go to great lengths, exceeding requirements, to accommodate the community, all in the interest of being “good neighbors.” “We often shut down our range during that time to observe community quiet hours. That’s not a requirement. This is something that we do to be good neighbors in support of our community. There’s a lot of things like that the military constantly does to try to support the community’s growth, . . . the desires and needs of the residents even if sometimes it means complications for us.”

However, this solicitous approach is not the rule. As Bob Matthias describes inescapable impacts in his own neighborhood from Seal exercises at the Oceana Annex, he reverts to the “sound of freedom” rationale. “They’re shooting all times of the night. They’re blowing stuff up, the house rattles, things like that, because they’re out there doing exercises and getting ready to go overseas and kill folks. We have a lot of noise impacts.” A journalist for the local newspaper of record, The Virginian-Pilot, relates the misfortune of newcomers to the area unwittingly renting apartments in a flight path while most locals understand the realities of jet noise. Land use planning has been used to address these issues to some extent, but its effectiveness is limited for a nuisance that clearly transcends zone and installation boundaries. It is often more effectively addressed at this larger scale through agreements regarding operating hours.

As jurisdictions sharing extensive borders, the communities and installations in Hampton Roads frequently negotiate other joint impacts such as stormwater drainage through operational agreements that they carry out at the staff level (Johnson, Frantzen Interviews). Also worth noting, in an era of austerity, communities and installations increasingly team up to maximize resources through mutual aid agreements for fire and

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15 Public Affairs Officers also play a role in mediating community/military issues, but are not as involved with planning issues.
other emergency services. In 2018, the City of Virginia Beach partnered with the Navy to form a joint fire station to reduce response times in a neighborhood where property values made building a new station infeasible (Rizzo, 2018). The two departments had already been conducting joint training exercises, but this was their first foray into a permanent joint venture. The military has increasingly formed community partnerships for common services from dog-catching to waste management in order to cut costs (City of Monterey California, 2017; Conger, Smith, Bolden, & Sturk, 2017).

3.2.4. Community/military networks
In addition to interacting through specific planning processes and institutions, in the Hampton Roads region, military and civilian life overlap in the professional and community realms. A local military reporter describes that “the base and the community are kind of one and the same in a lot of ways.” In the professional realm, it is common for senior decision-makers in the military to transfer into equally influential civilian roles upon retirement, often leveraging their inside knowledge of military organizational processes in their new roles. In the most obvious examples, retired military officers have transitioned into liaison positions. Doug Beaver, the former Commanding Officer of Naval Station Norfolk became the Military Affairs Liaison for the City of Norfolk, Craig Quigley, a Rear Admiral who served as Deputy Assistant Secretary of Defense (Public Affairs) in the Pentagon became the Executive Director of the Hampton Roads Military and Federal Facilities Alliance, and Bruce Sturk, formerly an Air Force colonel, became the Director of Federal Facilities Support for the City of Hampton.

In other transitions from military to civilian roles, professionals leverage their military knowledge and relationships as a subset of their new duties rather than as the defining aspect of the role. For example, Kit Chope, who served as the Commanding Officer of Naval Air Station Oceana assumed the role of Vice President for Sustainability at the Port of Virginia and Ray Toll, a former Navy captain became the Director of Coastal Resilience Research at Old Dominion University (ODU). Paul Olsen has leveraged his experience from years in the Army Corps of Engineers, culminating as Commanding Officer of the Norfolk District, into three related positions: a role at ODU as Director of Programs and Partnerships, National Policy Director of the American Flood Coalition, and founding president of a strategic engineering firm, all focused on sea level rise and resilience. Others, including Ann Phillips and Joe Bouchard, have parlayed their senior naval roles into civic leadership, serving on boards, and acting as advocates for adaptation (see next section). This pervasive military expertise infuses public and private governance in the region.

Community connections are even more extensive as military personnel and their families are a full part of the community, and many members of the military choose to retire in Hampton Roads (in spite of the traffic congestion). Several city staff people remarked upon the high levels of voluntarism among the military, rendering them more prominent as community participants. Christine Morris, Norfolk Chief Resilience Officer praised their contribution. “They’re our residents and having them here is a huge benefit. They are tremendous citizens. They volunteer, they’re just great to have as members of your community, even if people say there’s a high in and out [a high turnover rate]. It doesn’t
matter. Whoever they're bringing in, in general, is just a great person to have living in your city. That's a huge benefit for having the navy here.” The local military reporter acknowledges the voluntarism, but puts it into simple social terms as well, “I would say the community and the military here are just very much intertwined in part because people do live off base. People in the military coach soccer, they're volunteering at churches, they're playing social sports. I've played kickball with people in the military.” In other words, community/military interaction that influences land use, infrastructure, and institutional decisions is also a fundamental part of the social fabric of the region.

3.3. Norfolk adaptation planning: interdependence emerges
Adaptation planning in Hampton Roads has been underway for over a decade featuring a range of local and regional efforts. To understand the features of urban/military collaboration, it must be considered within the larger landscape of adaptation planning. Even in this nominally defense-dependent region, adaptation itself is not defense-dependent. The surfeit of adaptation activity has emerged due to a combination of local advocacy, federal and foundation support, among other factors. However, urban/military collaboration does contribute one important part of regional adaptation planning, and understanding why those collaborations arise and what outcomes they promote can offer lessons for other coalitions. All of the planning processes build on each other to some extent, and have created a critical mass, so it is difficult to disentangle the effects of a single process. However, it is possible to use the lens of urban/military planning to understand some key contributions.

Among local insiders, several events consistently arose as “turning points” for adaptation planning, and some of them specifically for urban/military collaboration. They are highlighted here to provide context and a point of reference for the more detailed discussion of adaptation drivers that follows. Each one of these at the very least helped raise awareness of flooding impacts, and some of them also galvanized policy and planning responses.

3.3.1. Turning points, adaptation plans, and projects16

Turning points
Hurricane Isabel in 2003 impacted Virginia more than any other state, prompting evacuation orders of flood-prone areas in Norfolk, Virginia Beach, and at least five other Hampton Roads municipalities. Military personnel were also evacuated. At Sewell’s Point on Naval Station Norfolk, a near record high of 7.9’ registered. The storm resulted in almost $1 billion of insured property damage in Virginia, and actual damage may have been double that amount (National Oceanic and Atmospheric Administration, 2004). According to a Norfolk stormwater engineer, Isabel “woke the city up to its vulnerabilities.” Bruce Sturk, Hampton Military Liaison calls it a “tipping point” due to the $143 million of infrastructure upgrades required afterward at Langley Air Force Base.

16 The underlined sections indicate urban/military cooperation.
Hurricanes Katrina and Rita in 2005 notoriously flooded most of New Orleans as storm surge breached the levee system. Across the Gulf Coast close to 2,000 people died and $125 billion of property was damaged. These storms were another “wake up call” for Norfolk, even though they didn’t have an impact locally, according to a Norfolk stormwater engineer.

The Fugro Atlantic City-wide Coastal Flooding Study for the City of Norfolk was awarded in 2007 and completed in 2012. The Norfolk office of this Dutch firm identified 15 areas susceptible to flooding and designed preliminary mitigation strategies for four watersheds. This provided foundational analysis for other studies including the USACE Norfolk Coastal Storm Risk Management Study, the Dutch Dialogues and the Intergovernmental Pilot Project. Christine Morris, Chief Resilience Officer for the City of Norfolk avows that “none of it would have happened without that base knowledge . . . every time we do something we’re digging back into that data.”

During Nor’Ida in 2009, a nor’easter that formed in the aftermath of Hurricane Ida, over seven inches of rain fell in much of Hampton Roads, with 18” in Hampton itself, flooding some homes with up to a foot of water. The high water mark at Sewell’s Point was once again near the record high. Civil engineer Tom McNeilan, previously of Fugro Atlantic, describes how the physical impacts attracted national attention. “We had continual flooding for 60 hours where the low tide was higher than the highest astronomical high tide on the tide charts . . . That got everybody to help wake people up. Norfolk got a lot of exposure. NPR called Mayor Fraim and he did an interview . . . Yes, one of these days we’ll have to retreat from some of the area . . . because of that, essentially, Norfolk had front page stories about him in the New York Times, and Washington Post. NPR then the next year, next two years, followed up around late November. That put a spotlight on this area and some of its challenges.”

David Titley, Rear Admiral, Oceanographer of the Navy, and former director of the Navy Climate Change Task Force gave a keynote address, “Climate Change and the U.S. Navy” at the Blue Planet Forum in December 2010 (Harper, 2010). According to Joe Bouchard, this attracted significant local attention. “All of a sudden, locally the business community and a lot of people will ignore environmental groups and tree huggers, they're just trying to get money for their organization, but they couldn't ignore a Navy Rear Admiral. That was a game changer.”

Hurricane Sandy in October 2012, caused catastrophic damage throughout the Northeast, most notably in New York City, but only caused minor flooding in Hampton Roads. However, the resulting Disaster Relief Appropriations ultimately went toward funding several projects in Hampton Roads. Scott Smith, the Norfolk Coastal Resiliency Manager relays the local impact. “I tell people, Hurricane Sandy was very, very good to us. We weren’t impacted, but we’ve reaped a lot of benefits with our beach nourishment, with the NDRC grants.”

The Hampton Roads Adaptation Forum, intended to facilitate discussion between the regional community of practice and outside experts has taken place on a quarterly basis.
since 2012. It fosters ongoing dialogue between practitioners and experts in the region, often including military attendees. Joe Bouchard suggests it has played a pivotal role. “That was an invaluable foundation for the pilot project. That was really the beginning of the military/civilian collaboration although it really wasn't collaboration at the forums but people got to know each other and develop a better understanding with each other.”

In June 2014, U.S. Senator Tim Kaine hosted the bipartisan symposium “Rising to the Challenge” at Old Dominion University. The conference featured federal and regional experts and included a large military presence, increasing the legitimacy of the topic. Skip Stiles, the Executive Director of the local environmental group Wetlands Watch suggested this was a turning point. “The captains and colonels and flag officers that were there, felt as though it was a legit forum . . . it was a bunch of flag officers saying, ‘Hey, we got a problem’ and they were in a room talking to other members of congress. There were 350 people in there who were from various sectors in the region so, I just think . . . that was one of those moments that sort of started to change things.”

In July 2016, The Union of Concerned Scientists released the report “The US Military on the Frontlines of Rising Seas,” forecasting large-scale loss of land and housing for military installations across the East and Gulf Coasts (Union of Concerned Scientists, 2016c). While typically the military had been opaque about specific impacts, the report included maps that illustrated the potential losses, including three installations in Hampton Roads. A local military journalist noted this as a turning point, due to the graphic representation and attention from an outside organization. “maps you may have found are hard to find of any impact. Everything's kind of blocked out on the military base. . . . That was probably . . . when it really grew a life of its own and more people started paying attention to it because there was an outside organization that forecasts in the future.”

In October 2016, Hurricane Matthew dropped 14-18 inches of rain in less than twelve hours, just weeks after another tropical storm had left the ground saturated. This was equal to 25% of the annual rainfall in one day (Porner & Sterling, 2017). Residential neighborhoods in Virginia Beach and Norfolk experienced extensive flooding. An engineering professor involved in adaptation planning noted the response. “The flooding in Virginia Beach was really bad. I think they had already started working on these problems, but I think they recognized -- they are making it a higher priority maybe based on what the citizens’ response was to those circumstances.”

Adaptation plans and projects

Adaptation projects have been proliferating in the region at a range of scales from small community projects to large federal efforts. These are the major ones that heavily rely on multiple levels of government. Key plans in Norfolk and Virginia Beach are also included as important context for the discussion that follows.

USACE Norfolk Coastal Storm Risk Management Study, authorized July 2012, $3 million funding appropriated after Hurricane Sandy. Colloquially known as a 3x3x3
study which means that it is a feasibility study limited to 3 years, $3 million, and review by all 3 levels of the Corps. Chief of Engineer’s Report due January 2019. The study proposes four storm surge barriers as well as some non-structural and nature-based measures to address flooding with an estimated project cost of $1.57 billion.

The Rockefeller Foundation selected the City of Norfolk for a 100 Resilient Cities (100RC) grant in 2013, the first year of the program. Chief Resilience Officer Christine Morris, whose first two years were funded by Rockefeller, was appointed in 2014. The city has produced a resilience strategy, a long-term vision (Vision 2100), and a zoning ordinance to begin implementing that vision.

**USACE Willoughby Spit and Vicinity Coastal Storm Damage Reduction Project,** authorized 2014, completed May 2017. Beach nourishment for one of the most flood-prone areas of Norfolk.

Under the **Intergovernmental Pilot Project**, promoted by local adaptation advocates and ultimately sanctioned by the White House, Old Dominion University convened local, regional, state, and federal stakeholders. Navy representatives formed a large part of the federal presence, though stakeholders from the Air Force, Coast Guard, Army Corps, DHS, DoE and DoT were also involved. The pilot unfolded in two phases from June 2014 to June 2016. The final report included recommendations to institutionalize relationships across levels of government, improve data-sharing and form a regional body with implementation authority for adaptation (Steinhilber et al., 2016).

The **Dutch Dialogues Virginia: Life at Sea Level** in June 2015 was a second edition of an event originating in New Orleans after Hurricane Katrina to bring together Dutch and local experts. Sponsored by the Dutch Embassy, Hampton Roads Planning District Commission, the cities of Norfolk and Hampton as well as an engineering and architecture/urban design firm, the five-day workshop was a forum for blue-sky planning and design for a resilient future in the Tidewater region. According to Katerina Oskarrson, the Norfolk Deputy Chief Resilience Officer, this event was “transformational” for the City of Norfolk’s water management approach. It was also instrumental in securing a National Disaster Resilience Competition award.

In November 2015, the Commander Navy Region Mid-Atlantic submitted a nomination to the OEA for a **Joint Land Use Study** for the cities of Norfolk and Virginia Beach and four adjacent naval installations. The Hampton Roads Planning District Commission served as the sponsor for the project which ran from December 2016 to August 2018. In the RFP, they indicated the purpose of the study to “assess the impacts of sea level rise and flooding on areas of mutual interest to the military installations and municipal participants.” Based on impacts to critical infrastructure, the study identifies high priority areas within the two municipalities to pursue flood mitigation measures

- The HRPDC sponsored a second JLUS for Portsmouth, Chesapeake, three naval installations and associated facilities, running from September 2017-March 2019 with a focus on transportation, land use and flooding.
• A concurrent JLUS is underway for Joint-Base Langley Eustis and the surrounding municipalities covering flooding and other encroachment issues.

In January 2016, Norfolk (through the state of Virginia) was awarded $120 million from HUD in the National Disaster Resilience Competition\(^{17}\) for several flood mitigation projects in the Ohio Creek watershed and Chesterfield Heights neighborhood. Teams at the Dutch Dialogues formulated the initial proposals.

As part of 100RC, The Rockefeller Foundation sponsored a Resilience Value Realization Workshop in March 2016 and a Resilience Value Assurance Review in February 2017 to coordinate efforts across the City, Army Corps and Navy.

The North American NATO Headquarters are located in Norfolk, where they held a conference on “Interdependency in Resilience” in May 2017 to improve collaboration across the civil, military, and private sectors. The City of Norfolk has provided data for NATO to test an urbanization model that simulates cascading infrastructure failures (Oskarrson Interview).

The cities of Norfolk and Virginia Beach have also undertaken some major assessment and planning projects that are an important part of the regional adaptation context:

The City of Norfolk adopted their Vision 2100 plan in November 2016. It complements the city’s comprehensive plan, plaNorfolk 2030, with the explicit goal of addressing long term impacts of climate change, especially sea level rise. This plan was developed with the help of the Rockefeller Foundation in the context of Norfolk’s designation as one of the 100 Resilient Cities. Identifying adaptation areas as well as opportunities for redevelopment on higher ground, this plan is at the “bleeding edge” among cities grappling with sea level rise.

• To begin implementing the plan, the city adopted a new zoning ordinance that went into effect in March 2018 with a “resilience quotient” system to achieve more resilience in the flood plain and direct new development toward higher ground.

The City of Virginia Beach retained engineering firm Dewberry in January 2015 to conduct the Virginia Beach Comprehensive Sea Level Rise and Recurrent Flooding Planning Study. $3 million of funding was provided by the city supplemented by an $844,000 NOAA Regional Coastal Resiliency Grant in March 2016. Study to be completed spring 2019.

• The city is also updating its storm water master plan and planning capital improvement projects through 2023 to update the entire drainage system.

\(^{17}\) The competition awarded almost $1 billion to fund resilience for thirteen cities and states that had experienced disasters in 2011-2013.
3.3.2. Adaptation collaboration: drivers
A range of factors have contributed to urban/military collaboration for adaptation in Hampton Roads, ranging from negative publicity to impacts on the military mission. As in almost every documented case of adaptation, experiencing impacts is a key motivation for planning. In this case, it has helped to spur a recognition of interdependence, the primary driver of collaboration. Two additional drivers have played a critical role: championing collaboration, and framing climate politics.

Recognizing interdependence
In numerous climate studies, researchers have demonstrated the intuitive claim that experiencing impacts is one of the most effective drivers of adaptation. Norfolk, with its proliferation of “rain bombs,” sunny day flooding, and storm surge impacts, is no exception. As Norfolk residents have increasingly experienced the effects of relative sea level rise, local government has responded to their obvious concerns. George Homewood, the City of Norfolk Director of Development, attests to the power of experiencing flood impacts, even by proxy, “It's a little hard for somebody to deny that something's happening when you're confronted with a picture that shows that kayaking on a street is a better way of getting around than driving on that street. That's really helped within our region. . . . because of that physical reality and people’s eyes being opened, they're now willing to actually listen to science and listen to projections of the way things might be.”

City of Norfolk Deputy Chief Resilience Officer Katerina Oskarrson goes further, attributing the city’s progress on adaptation planning to the frequent experience of impacts. “The main reason why we have been successful with some of these projects is because, even before we came, Norfolk was very aware about some of these issues. We face a lot of nuisance flooding, so people see it in the streets, they see the change, they see that there is an issue, and it’s much easier to engage them around it.” The City of Virginia Beach had done less to address flooding than Norfolk, but in 2016, experienced the wake-up call of Hurricane Matthew which dropped 25% of the average annual rainfall in a day, resulting in dramatic flooding (Porner & Sterling, 2017). Deputy City Manager Ron Williams explains that the storm galvanized the city’s focus on stormwater planning. “Matthew was maybe 3,000 homes flooded. For the most part, the rest of the city was fine. It was not really that much of a tidal event, just mostly rain event, but we really have been heads down into these comprehensive studies and coming up with a master stormwater plan.”

The military in the Hampton Roads area has also experienced increasing flooding, responding with operational and infrastructural changes. According to Joint-Base Little Creek-Fort Story Commander Captain Frantzen, in major hurricanes, they know parts of the base are inundated, so the Navy Region may determine that only mission essential personnel should remain on base; preparing for severe storms may also include securing ships in a “safe haven.” To prepare for flooding from extreme rain events, some land use and infrastructural policies have also been implemented. “Well, when we do build new structures, we try to build them higher up to ensure that you have some protection from the rain. So for example, one of the areas that floods is . . . just a storage lot, but when the Marine Corps is going to expand that building, we'll require them . . . to raise that. When
Experiencing impacts is a primary explanation for Norfolk, Virginia Beach and the Navy’s independent progress on adaptation planning. However, the experience of sea level rise and flood impacts has also fostered a distinct sense of interdependence between those entities, one of the major factors explaining their recent move toward a more collaborative approach. While the 2005 BRAC round galvanized joint planning, it was joint in name only. The municipalities involved were subject to intense pressure from the federal government, rendering compliance a matter of economic survival. Subsequent joint planning occurred on slightly more evolved terms as it was not under immediate duress, but military representatives continued to bring a fair amount of pressure to bear on their interactions with civilian decision-makers. This dynamic was clear in the lead up to the Hampton Roads Military Transportation Needs study where the military message frequently boiled down to “ignore the impacts of traffic congestion to the military mission at your peril.” Under previous planning initiatives, military withdrawal represented an existential threat to the community, whereas in the era of sea level rise, increased flooding represents an existential threat to both the military and community. While interdependence may seem superficially like bland rhetoric, it in fact represents a substantive departure in the character of urban/military relations.

Both infrastructural and social components contribute to the emerging awareness of interdependence. Hampton Boulevard, the main route linking Naval Station Norfolk to the city of Norfolk floods frequently and has become emblematic of the shared vulnerability (Montgomery, 2014). Military and civilian decision-makers in the region frequently reference the inextricable linkages between the base and community for the full suite of urban infrastructure: power, transportation, water, waste, and communication. In addition, they commonly make the point that most military and civilian personnel who work on a given base do not live on that base, but in the surrounding region. By extension, their families live and work in the community. As Senior Regional Planner Ben McFarlane put it succinctly, “it’s not like they’re a separate place.”

Norfolk Planning Director George Homewood neatly encapsulates the commonly held perspective on joint infrastructure, explaining that it has translated into action, providing a justification for joint planning processes. “The navy while it has its base, that base is part of a larger community. And since most of those sailors don’t live on that base, that community is a part of everything they need to be aware of and be cognizant of in terms of resilience and preparation for both shocks and stresses. They get their water and their sewer and electricity, and the roads get the sailors. All of that stuff is coming right through the city of Norfolk. We are joined at the hip in many ways. And the navy is really beginning to figure that out. Our new city manager has started what we call the P4 process, which is the public-public-private partnership where one of the publics in that is the navy.” Specifically addressing the current Norfolk/Virginia Beach Joint Land Use Study (JLUS), Community Planning Liaison Officer Mercedes Holland suggests that

You raise the area it helps create a buffer . . . Now, it's not the ultimate buffer because if you get enough water, you know, it's going to [flood] but it will help this area from some of the more routine flooding.”
joint planning is essential to Little Creek-Fort Story’s ongoing operation. “Even if we don't outright call it sea level rise because that could be a political term, we can address flooding. I don't think anybody denies the fact that we are experiencing flooding, and in this particular JLUS we are trying to work toward compatibility for our missions and operations, so that we can continue to operate. That compatibility needs to look at how do we be partners with our community on their initiatives to preserve the community from flooding (Figs.3.8, 3.9).”

**Fig.3.8** The map of “Roadways Serving the Navy” from the 2018-19 Norfolk/Virginia Beach Joint Land Use Study is representative of the physical and social interconnections that underlies interdependence.

From the city perspective, City of Virginia Beach Stormwater Engineer Shanda Davenport who was also involved in the Intergovernmental Pilot Project puts the interdependent relationship in terms that explain the shift in the balance of power from the earlier BRAC era. The city is no longer merely at the mercy of the base due to its economic power; the reliance is mutual. In her perspective, the base is an economic engine for the city, but it is also clear that people affiliated with the base depend on the city in their daily lives. Responsibilities don’t stop at the fenceline for either side; in an apt metaphor, the relationship is not a “one-way street.”

While this type of language could be expected from city staff trying to justify their significance and preserve their economic lifeline, it is reinforced by similar analysis from a commanding officer in the region. Captain Joey Frantzen, the Commander of Joint Base
Little Creek-Fort Story plainly states that the base has a vested interest in the city’s success. "Okay, now we know what the issues are, what’s the solution?" Can we find a win-win solution for the base and the city? We have a vested interest that the city be able to operate and continue to grow as well as the base has a vested interest to be able to continue to do our missions and our operations.” As discussions of shared vulnerability and solutions become more common on both the military and civilian side, it becomes clear that these are not just wishful talking points on the part of city staff, but increasingly a shared assessment of the material conditions for joint planning.

Of course recognizing interdependence is motivated by financial expedience as well. Though it is difficult to believe given ballooning defense budgets that overshadow other domestic spending, many in the military claim that they are underfunded, particularly for infrastructure and installation operations (Harrison, Spoehr, Eaglen, Hale, & Conger, 2017). When the military services have been seeking to maximize efficiency through tools such as “intergovernmental support agreements” for waste management, it is only logical that this approach would extend to flood resilience. CPLO Mercedes Holland relates that installations are seeking community collaboration from a weakened financial position. “The military has not been overly funded in the last few years, particularly in facilities and infrastructure. It was hit rather hard during sequestration and we’re, the military is still working through those issues now. When there is a lack of funding or options available, you have to be creative, you have to try to figure out, okay well the community’s going to do stuff with or without us. It's so much better if we can all collaborate together, come up with solutions that work for everybody.” City staff are equally cognizant of this reality, as Scott Smith, the Norfolk Coastal Resiliency Manager makes clear, “Everybody is looking to see how they can become more efficient and effective with the limited resources they have, and the Navy is no exception.”

Unlike the nominally joint planning that occurred in response to the 2005 BRAC round in which cities accommodated the military under duress, and even the later Military Transportation Needs Study, in this case, cities are being proactive, driving the collaboration and soliciting input. Arguably, this could be because the cities “learned their lesson” and are trying to forestall future threats. Even so, the direction of the requests matters, representing a shift in urban/military planning dynamics from a federal edict to a city-issued invitation to participate. This city-led approach is particularly important in terms of increasing, though certainly not guaranteeing, the potential for adaptation processes to be participatory and democratic. Michael S. King, the Regional Community Planning Liaison Officer for the Navy’s Mid-Atlantic Region, observes the character of their current collaboration. “The City of Norfolk makes sure that the Navy stays engaged in the issue because it's a major planning issue for them. They have a lot of money invested in this challenging issue, including several grants that they've received. Norfolk makes sure that they invite the Navy to everything, which is great. The Navy can't succeed unless we collaborate with the communities that surround our bases.”

Katerina Oskarrson, Norfolk Deputy Chief Resilience Officer, elaborates that in her three years of working for the city, she has noticed that as the city “invite[s] them to everything,” there has been increased engagement from military stakeholders at planning
workshops and meetings. Homewood notes that the City of Norfolk’s more proactive stance is partially driven by their economic development approach. The city maintains the ambition to shift Norfolk’s connection to the military, recalibrating their relationship to one of partner rather than dependent. “One of the things that we’ve sort of brought to the table of the JLUS is that somehow Norfolk has to become less dependent on the federal government for its economy in order for us to be a better partner for the navy.”

While economic diversification has been the much sought after but unattainable goal for years, the contention that navy bases, and especially Naval Station Norfolk, cannot realistically relocate bolsters the cities’ power in this planning relationship. Not only is the Navy obviously tied to the water by its essential mission, but given the level of urbanization and redevelopment of former navy yards along the East Coast, it would be almost impossible to find an alternative location for a 4,600 acre installation. While Naval Station Mayport in Jacksonville is a similar size, and is frequently raised as a rival, Joe Bouchard, previously a commanding officer of Naval Station Norfolk, dismisses that prospect. Not only was Bouchard intimately familiar with operations in Hampton Roads, he was involved with two BRAC rounds and led a team that assessed all of the Navy bases. He contends, “Anyone that said navy ships may move to Mayport as the sea level rises doesn't know what they're talking about, they don't have that kind of experience, and they're not familiar with Mayport. As part of our work we visited every navy port basically in the world, so that's not a worry. The crisis is going to hit Mayport before it hits Naval Station [Norfolk] even though Naval Station gets all the publicity partly because of me. I started that to raise awareness of the issues.”

In spite of this definitive assessment, for those without the firsthand knowledge of previous BRAC rounds, some anxiety remains that the Navy could withdraw or downsize. Given the Navy’s position regarding past land use and infrastructure decisions, this worry is highly plausible. Engineer Tom McNeilan, who has been extensively involved in water management in the region submits that the cities are not standing on solid ground. “We're standing on a trampoline, it's not a solid base. . . . The Navy can push and pull and say, ‘We're going to diversify. If Hampton Roads doesn't get their act together relative to sea level rise, so we can get our sailors and the people to the bases and all, we're going to move things.’” This warning would be very similar to the one which military representatives issued previously regarding traffic congestion in the region.

Despite Bouchard’s confident assessment, this was raised as a point of discussion during a JLUS Technical Committee meeting. Christine Morris, Norfolk Chief Resilience Officer, asked the Navy representatives directly at what point disruptions would become so severe that the Navy would consider relocating (AECOM, 2017b). The JLUS Phase Three Report anticipates the fiscal hardship for the municipalities if the Navy and resulting tax revenue dwindled. Even if the Navy did not entirely relocate, concerns about downsizing remain, particularly given the strategic “Pivot to Asia” that occurred under the Obama Administration. However, Craig Quigley, Executive Director of HRMFFA,
notes that there are limits to the number of ships and submarines that can be relocated to the West Coast due to the imperatives of strategic dispersal.

Accepting that a Navy base must remain on the water, that there is no port with adequate space to rehouse Naval Station Norfolk, and that the Navy must maintain a significant East Coast presence, the City of Norfolk and Virginia Beach’s reliance on the material facts and rhetoric of interdependence could be subverted in one final way. The possibility remains that when it comes to an existential threat, the military could revert to a traditional fortress approach, turning the bases into self-sufficient enclaves. Captain Vanderley, the Commanding Officer of NAVFAC Mid-Atlantic contends this would be ineffective, returning to the mantra of interdependence, “even if you were going to wall off the base and make it impervious to sea level rise, it’s ultimately not going to solve the problem, it really has to be something jointly, the community and the navy base solve together. Utilities generally come from off base, all these kind of things.” However, Bouchard, remaining convinced that the Navy would maintain their force structure locally, suggests the possibility of a “radical” option that “you will probably not get anyone to talk about” which entails re-engineering the piers as a floating structure and relocating other components of the base further inland. In a world where floating homes and even floating cities such as the libertarian Seasteading Institute are increasingly touted as innovative solutions to sea level rise, this is a plausible prospect (Vartan, 2018).

Taking all of these contingencies into account, for now, interdependence is pivotal to urban/military planning, and the physical facts of infrastructural and social interdependence support this. Though recognizing interdependence might seem obvious, it becomes a leverage point largely because it departs from the previous military assumption that an ideal operating environment hinged on maintaining boundary conditions and the previous civilian assumption that the military operates as an isolated fortress. More than the municipal stakeholders, the military stakeholders have shifted from maintaining the illusion of self-sufficiency to recognizing the reality of interdependence. As a result, the cities of Norfolk and Virginia Beach are in a significantly improved position to engage in actually collaborative planning processes with local installations in comparison to post-BRAC planning. Experiencing vulnerability to a common external threat has shifted the balance of power in their planning relationship.

Champions

Raising Awareness

Operating from this foundation of interdependence, local champions have used the special relationship between the military and the community to advocate for collaborative adaptation. The common path from military leadership positions to those in local and regional government or business plays a role in this (see Sec. 3.2.4), serving a specific agenda. Retired naval officers who have assumed positions of influence in the region have been able to leverage their authority and credibility in service of an adaptation agenda, sometimes enlisting active duty naval personnel in their campaign as well. Of course, some of the key champions in the region have no naval affiliation, but they also tend to consider the urban/military relationship in their advocacy. These advocates work
to achieve progress on adaptation in three main ways: raising awareness and framing the issue, building networks and initiating projects.

As champions have taken on the challenge of raising awareness, they have done it strategically, attempting to leverage the military to gain a wider audience for climate issues. Joe Bouchard, the Commanding Officer of Naval Station Norfolk from 2000-2003 has been one of the key advocates for addressing sea level rise in the region, making frequent appearances in films and in print. He has also worked extensively behind the scenes, helping to galvanize several turning points. In 2010, recognizing an opportunity in an existing quarterly environmental forum, he suggested to the organizers that they devote an event to sea level rise and invite the Oceanographer of the Navy, David Titley, to give a presentation. According to Bouchard, Titley’s appearance dramatically raised the profile of the topic, attracting a much larger audience than usual, and reaching climate skeptics. Even those who expected to have their views confirmed may have been convinced. “When Dave Titley came down we had four hundred and fifty people. A lot of them came just because he was a rear admiral and a lot of people assumed he'd be a climate change denier but he gave this incredible presentation, no holds barred, it is real, it is getting worse, it is caused by human beings and we damn well better do something about it. All of a sudden, locally the business community, and a lot of people will ignore environmental groups and tree huggers, they're just trying to get money for their organization, but they couldn't ignore a Navy Rear Admiral. That was a game changer.”

Larry Atkinson, ODU Professor of Oceanography, who also helped organize the event, was surprised by the level of response. “The national press we received before, during and after the December 2 forum by Admiral David Titley was astounding to say the least. After that I felt ‘Well, we have their attention... now what?’” (Atkinson, 2011) This was no accident on Dave Titley’s part. He has made it his mission to speak about climate change to politically diverse audiences where he can have an impact with a pragmatic climate message (Titley Interview). Though Bouchard had not known Titley personally, he had the inside knowledge of naval operations to secure the Oceanographer of the Navy as an appropriate and credible messenger on sea level rise.

Similarly, Skip Stiles, the Executive Director of local environmental non-profit Wetlands Watch and a veteran of Capitol Hill, sought to reach a broader audience than the typical “converts” to sea level rise. Bouchard identified Stiles as one of his circle of three early advocates along with Larry Atkinson. Soon after Tim Kaine was elected to the Senate, Stiles and other environmentalists from the area met with Kaine’s chief of staff proposing a bipartisan, bicameral regional summit on sea level rise. They achieved that, organizing U.S. Senators and Representatives and the mayors of Norfolk and Virginia Beach, who broke down in party affiliation to three Democrats and three Republicans. Assessing the outcome of the forum, Stiles contends that for military personnel, the bipartisan aspect was key to the legitimacy of the event and in turn, their presence lent the issue further credibility. “I think the first piece of it was that there were Democrats and Republicans

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19 The Blue Planet Forum, sponsored by NOAA, the Chesapeake Bay Foundation and Old Dominion University
there, so then it was not Senator Kaine running an agenda . . . It was an open forum and I think that in that forum, the captains and colonels and flag officers that were there, felt as though it was a legit forum . . . it was a bunch of flag officers saying, ‘Hey, we got a problem’ and they were in a room talking to other members of congress. There were like 350 people in there who were from various sectors in the region so, I just think that they were like woah, that was one of those moments that sort of started to change things.”

Rather than organizing a one-off event, Paul Olsen, the Commanding Officer of the Norfolk District of the Army Corps of Engineers from 2012-2015, regularly infused sea level rise into his public remarks. In his telling, he ignored advice to avoid the politically charged term when he arrived in the region. He believes that his role allowed him to both depoliticize the issue by avoiding causality and to successfully craft a message that gained broad uptake. “Why it's happening? That is of extreme interest to me, but really, my job as an engineer . . . is to strategically plan for what is happening. When I started talking like that then others started sort of emulating. I remember saying lines of “water doesn't care about political boundaries.” That was my phrase and now you see that all over the place. A lot of the early talking points I could put out there because I'm not a politician, I'm a federal engineer and I can call it like I see it.” He positions himself as a technocrat so that his statements can be received as apolitical.

Across the board, these authoritative figures in uniform and the advocates who gave them a platform galvanized a broader community than would otherwise have been involved in climate issues. For the most part, these adaptation champions are not only effective at promotion, but self-promotion. They may have overstated their own roles in advancing adaptation. However, some others do recognize their impact. Meg Pittenger, Environmental Planner for the City of Portsmouth, whose father also served in the Navy, notes appreciatively: “That's the good thing about this area, is that the military guys when they retire, a lot of them stay around . . . and do a lot of good work.” Though the Navy as an organization is no adaptation champion, representatives of the Navy, especially once they have retired, use that institutional credibility to champion adaptation.

**Building Networks/Inside Knowledge/Access**

In addition to raising awareness through framing the issue, local champions who have passed through multiple military and private sector roles have built crossover networks useful for adaptation. For example, Kit Chope became the Vice President of Sustainability at the Port of Virginia after a navy career culminating as Commanding Officer of Naval Air Station Oceana in Virginia Beach. His experience transitioning into his new position exemplifies how posts in military and civilian environments can translate into formalizing relationships across sectors. “When I got here I think that the relationship had atrophied away a little bit just through some inattention so since I still knew all the guys, we've gone back to having very regular meetings with base leadership which is wonderful.” He also brings his attitude toward regional interdependence across sectors. He draws an analogy between the port and the navy, suggesting there is limited utility to solely hardening their own facilities in light of extensive dependence on surrounding infrastructure and communities. As a result, he regularly engages in regional adaptation planning as an advocate for the “whole of government” approach promoted through the Intergovernmental Pilot Project.
Joe Bouchard has been more intentional in his network building for adaptation, suggesting that he does not want to be a one-man show. Instead he has intended to “create a large cadre of people . . . who are advocates for action on sea level rise.” By some measures, he has been successful, engaging other champions who actively network on behalf of the cause. One of the key people he has involved has carried inside knowledge of naval operations into wider adaptation planning at multiple levels including national and local advocacy as well as the detailed mechanics of adaptation planning.

Rear Admiral (Retired) Ann Phillips After first served as the chair of the Infrastructure Working Group for the Intergovernmental Pilot Project. Since then, she has tirelessly met with and connected public and private sector decision-makers to publicize that the project report risks sitting on the shelf, that, "you know all that stuff you thought the pilot was doing? Well it is not happening, and here's why." In addition to operating at this political level, she has taken on the task of pursuing back channels to overcome obstacles to data-sharing between civil and military organizations. She explains her efforts to obtain navy data for a Virginia Institute of Marine Science (VIMS) initiative to develop a predictive regional flood map, “I know that if I just go through the normal channels it won’t happen because the same people that kept the data from getting to the cost of doing nothing people will keep this data from getting to VIMS so I have to go around them.”

Similarly, Doug Beaver, the new military liaison for the City of Norfolk, has been able to leverage his shift in position from the Navy to the City. Having been the Commanding Officer of Naval Station Norfolk, he has the inside knowledge of the systems the Navy uses to assess their own risk. At a JLUS Technical Committee Meeting, he asked Navy CPLOs if information regarding utilities could be shared from their classified reporting tool (AECOM, 2018a) which other city staff would not have been aware of. In this sense, involving champions with access to organizational knowledge that crosses the “fenceline” is indispensable to achieving substantive collaboration with a closed organization.

**Initiating Projects**

Perhaps most importantly, some of these regional champions have been critical to initiating and sustaining projects. From the outside, it might appear that the Hampton Roads Intergovernmental Pilot Project (IPP) occurred as a result of designation from the White House; however, that designation only occurred after local leaders campaigned for Hampton Roads’ inclusion. In November 2013, the White House issued an executive order, “Preparing the United States for the Impacts of Climate Change.” Though it established a task force of leaders on climate change, Hampton Roads was left out, possibly because the governor at the time, Bob McDonnell, was a notorious climate change denier (Bouchard Interview) (Springston, 2011; Weeks, 2012). Joe Bouchard saw the task force as an opportunity because federal, state, and local actors in the region were already collaborating to address sea level rise. He arranged a meeting at the White House between a group of Hampton Roads advocates and federal and naval representatives at the White House. This included Alice Hill, then the Senior Director for Resilience Policy.

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20 EO 13653, revoked by EO 13783 March 28, 2017
on the National Security Council who has continued to serve as a staunch adaptation advocate. The Hampton Roads group was comprised of Bouchard; Ron Williams, then the Assistant City Manager for the City of Norfolk; Ben McFarlane, Regional Planner for the Hampton Roads Planning District Commission; and Emily Steinhilber, then the Executive Director of the Virginia Coastal Coalition.

This White House meeting galvanized interest in Hampton Roads participation and Bouchard spearheaded efforts to proceed with the IPP. Having served with Assistant Secretary of the Navy Dennis McGinn, Bouchard requested that McGinn authorize the participation of multiple Navy commands. After setting up an interim steering committee, enlisting Old Dominion University (ODU) as the “convener” and working toward launching the project, the pilot received official endorsement from Alice Hill. In detailing this sequence of events, Bouchard emphasizes that “the Hampton Roads pilot originated as a local initiative (Bouchard, 2015).” Not only had McGinn sanctioned navy involvement, several of the key personnel on the steering committee from ODU had previously served at high levels in the navy and were able to leverage these connections to further the collaboration. While there is some disagreement as to who among these was most effective and how they exerted their influence, multiple people involved emphasized the importance of navy connections with local knowledge (Toll, Phillips, Covi Interviews). As it unfolded, the pilot rose to prominence as a model of intergovernmental collaboration and laid the foundation for subsequent Joint Land Use Studies all as a result of the local delegation’s successful pursuit of White House designation and military involvement.

**Framing**

Ardent champions did some of the essential work of helping to frame climate as a legitimate issue for a broad set of stakeholders in the region; however, effective framing arose in a more diffuse manner as well.

**Depoliticizing**

As exemplified in the Titley talk and Kaine forum, military representatives often serve to “depolarize” climate change and its consequences. Imbued with the authority of their office and perceived as apart from politics, they are able to convey the message in a way that is acceptable to those who do not identify as pro-environment. This depoliticizing effect does not only occur in one-off events, but in quotidian operations. CPLO Mercedes Holland who generally works behind the scenes rather than taking on a prominent advocacy role encapsulates how the perception of DoD neutrality can be politically

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21 Other federal attendees included: Jon Powers, Federal Environmental Executive; Molly Ward, Deputy Director, White House Office of Intergovernmental Affairs, Former Mayor of Hampton; Susan Ruffo, Associate Director for Climate Preparedness, White House Council on Environmental Quality; Rear Admiral Kevin Slates, Civil Engineer Corps, US Navy, Director of the Energy and Environmental Readiness Division of the Chief of Naval Operations staff; Commander John Marburger, Climate Affairs Officer, Task Force Climate Change, Oceanographer of the Navy’s staff. Other DC attendee Christina DeConcini, Director of Government Affairs, World Resources Institute, who helped arrange the meeting. (source: Joe Bouchard Pilot Project Timeline)
expedient: “It is important, I think, for us to be able to look at, how do we be resilient from anything that may come our way, regardless of what the political climate is at the time. I don't really get to have an opinion. I think most people with the federal government, they can have an opinion on their own time, but in this position, I have to stay as neutral as possible, and I have to be able to accurately represent the federal government and the Department of Defense, and all the layers in between, and so we know there's issues going on here. We know there are things that need to be solved, and we are working with the community to do so. We're just doing it from the common sense ways we are allowed to.” Framing resilience as “common sense” is analogous to the depoliticizing work that Paul Olsen does speaking in public from his position as a fact-based “federal engineer.” It also echoes the “common sense” rejoinder to other political debates that have become hyper-partisan, such as gun control. This depoliticizing approach downplays the relationship between climate change and flooding, attempting to avoid any discussion of causality. In this sense, it serves as a Trojan Horse for action on adaptation.

**Climate Security**

Another approach to framing is much more explicit about climate change, while still avoiding causality. The climate security framing, specifically arguing that addressing climate change in Hampton Roads matters because the region is essential to national security, only arises occasionally in local discussions. It is not the central argument that might be expected based on the narratives promulgated by national advocacy groups (see Ch. 5). The more common arguments relate to the potential economic impacts to the region as flooding hinders daily activity on bases and communities. Nevertheless, those who are trying to position Hampton Roads for federal funding do see climate security as a useful gambit. A City of Norfolk staff member suggests that the presence of the Navy accords the city national and international importance. Not only is Norfolk a port city exporting goods and services, it exports a “security product.” This helps local decision-makers to make the case that adaptation should be a high priority not only for Norfolk, but for the country. Understanding the situation in this way may in turn benefit the city.

This message, paraphrased here due to political sensitivity, makes explicit the local aspiration that the military presence will serve as a rationale for federal funding. However, some caution that this could lead to a dangerous complacency, that even with the region’s role in national security, hoping for a federal commitment to fortifying infrastructure is misguided. And even the new atmosphere of intergovernmental collaboration may provide a false sense of security. These advocates for adaptation suggest that the most effective, and even desirable, catalyst to serious local action would be a credible threat of another BRAC round. Skip Stiles argues that this type of realpolitik may be necessary. “When the navy or the army says, fix this problem or else, the next time we're looking at base realignment, you may not be on the list, and the private sector is saying, you know what, the word is out, that unless this region fixes it's infrastructure problem, this is not a good place to do business . . . That message I think would wake up the political system in the region.” This interpretation demonstrates how the climate security framing is a political tool that cuts both ways. Climate insecurity could become a justification for retreat instead of climate security offering a justification
for reinforcement.

### 3.3.3. Obstacles

Obstacles to adaptation and collaboration are all too common, and all of the usual obstacles, ranging from competing priorities to lack of institutional capacity obtain here. However, several are uniquely salient to the urban/military context.

**The fenceline**

The largest obstacle to urban/military collaboration is a simple lack of legal authority for the military to act across the “fenceline.” In a larger political context, this strict constraint on the exercise of military authority is an overwhelmingly positive feature of a liberal democracy. Yet it does create clear hurdles for adaptation proposals that might arise out of joint urban/military planning. Joe Bouchard puts it bluntly, based on his own extensive experience, “DOD cannot spend money off base. There are very limited exceptions and typically they’re approved on a case by case basis by Congress or it’s relatively small and you’re not building civilian infrastructure and you’re supporting operations—military operations.” Paul Olsen criticizes this limitation, noting that the only opportunities that do exist for work across the fenceline are insignificant given the scale of the challenge. “Fundamentally, when we're looking at challenges to our Naval bases as it relates to sea level rise, they have the clear authority to do anything they need to do on the base, but they don't have the authority for resilience engineering off base. With the exception of very, very, very minor funding opportunities from the Office of Economic Adjustment, which is that budget dust level, it's nothing.” Tackling this obstacle, Olsen and like-minded advocates have been carving out grounds for reform, attempting to expand the scope of military infrastructure spending beyond the base to address resilience in the surrounding community. This is part of a larger climate security policy effort addressed in Chapter 5.

**Discontinuities of leadership**

While there are numerous institutional capacity constraints, particularly on funding for planning and projects, in the urban/military context, the military command structure has several repercussions. The first is that commanding officers rotate every two to three years which means that as soon as they become familiar with the political landscape in an area, they leave. Continuity of staff relationships (discussed in the next section) is one way to address this obstacle, though it can’t entirely compensate for bringing each new commanding officer up to speed. Though COs are often compared to mayors, there is an important difference. While mayors might also have a similarly short term due to an election cycle, they would usually be steeped in the politics of an area, while a CO is typically arriving from across the country or the world, completely unfamiliar with the local political context. Further, a Commanding Officer may not have the ultimate authority over an installation or be an appropriate point of contact as a Norfolk stormwater engineer explains, “We met with the commanding officer, and it sounds like, commanding officer, he would be in charge of the whole thing, but that's not the case. There's certain buildings and certain facilities that are in a different command structure so that he gets a budget, but his budget can't be used for those facilities. It is really a frustrating piece.” It can be so difficult to determine who the appropriate point of contact
is that HRTPO Transportation Engineer Sam Belfield has recommended developing a national handbook for any locality attempting to interface with a base. Additionally, the military hierarchy strictly defines decision-making, such that local representatives sitting at the table may not be in a position to offer an opinion let alone make a decision.

**Regional fragmentation**
The final major obstacle to adaptation planning in Hampton Roads is regional fragmentation. While this is a typical obstacle in many regions and clearly transcends urban/military collaboration, it is so prominent here that it must be addressed. In addition, it does have direct implications for the urban/military relationship. As discussed earlier (see Sec. 3.1.2), the region is highly decentralized. Not only do many installations border on multiple municipalities, but military and civilian personnel working at a given installation are likely to be widely dispersed across a region, often crossing multiple municipalities for their commute. Returning to the Navy’s primary concern about roadway flooding, if jurisdictions are addressing flooding on their local roads in a piecemeal manner, that clearly presents a problem for military commuters.

In retrospective evaluations of the Intergovernmental Pilot Project, the Hampton Roads Planning District Commission was frequently cited as a key obstacle due to their unwillingness to take a leadership role. The HRPDC represents the consensus view of their constituent municipalities, responding to needs, rather than providing a vision. Ben McFarlane, HRPDC planner explains, “Our role is to provide technical information to our localities and to provide a forum for them to come together with other experts and stakeholders, to share information and to potentially come to a consensus or agreement on . . . what they can do. It's to provide that forum, not to actually tell them what to do. We don't give directives at the PDC.” However, several advocates involved in the IPP steering committee expressed frustration with this position and suggested that legally, the HRPDC could do more. The Virginia Regional Cooperation Act\(^{22}\) does offer latitude for planning district commissions to be more proactive if they choose, including the provision that “the commission may assist the localities by carrying out plans and programs for the improvement and utilization of their physical, social and economic elements,” though they are not legally obligated to implement plans.

The HRPDC rejects an implementation role for themselves and they oppose the formation of a new regional entity with implementation power, interpreting the appropriate regional role as purely advisory. As a result, they refused to sign the resolution that came out of the IPP recommending a regional resilience entity with “the capability to facilitate, plan, and implement action.” In a letter to the IPP Steering Committee, the Hampton Roads Chief Administrative Officer committee explained their opposition, “We support an approach where planning and consensus building will occur at the regional level under the existing authority of the HRPDC, with implementation remaining the role of local jurisdictions (Steinhilber et al., 2016, p. 137).” This issue is so politically sensitive locally, that many preferred to make their critical comments off the record. However, several also suggested that the existing Hampton Roads Transportation

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\(^{22}\) Chapter 42, Title 15.2 of the Code of Virginia, adopted in 1995
Accountability Commission, which funds projects planned by the Hampton Roads Transportation Planning Organization could be a model; in other words, even within the regional context, the proposal for a regional resilience body with implementation power is plausible, but it remains politically divisive.

3.3.4 Adaptation collaboration: mechanisms
The main motivating factors for collaboration were interdependence, champions, and framing. To an extent, champions orchestrated collaboration, especially as they initiated projects, but understanding how collaboration occurred requires also examining the quotidian details of joint planning. Several main mechanisms of collaboration are salient in this process: developing staff relationships, sharing data and information, agreement on decision-making frameworks, cooperating across municipal boundaries, and seeking changes to legal authority.

Staff Relationships
In the first years of adaptation planning, community stakeholders noted a tendency on the military side to observe silently, declining to contribute. Skip Stiles explains that the potential effect of sea level rise on installations had been seen as a security issue, but as the perspective on this shifted, military representatives were freed to engage. “I think it was the Department of Defense as much as this pilot project but prior to that, you'd be in meetings with people from the military commands on sea level rise and they would not say a word. They would take notes and leave. When you'd ask them questions, they couldn't talk about it. The reason is that sea level rise was seen as compromising operational readiness . . . In other words, you can't talk about it because you don't want people to know that a facility might be compromised for national security reasons. They were not able to talk about it. Then when things changed, they would engage. Suddenly, NAVFAC, the navy facilities command people were talking about it, and the NAVFAC commander was saying, ‘You know what? We're going to get two feet of sea level rise by mid-century and we need to deal with this and we need to deal with this with our civilian counterparts because most of our people, all of our electricity, all of our water, from the civilian governments outside the fence.’ That was when things started to change. The pilot projects helped that.”

At a practical level, recognizing interdependence translated into greater military participation at meetings, though as Stiles suggested, there were likely other political factors at work as well. This shift toward more military input in meetings would seem to risk creating the atmosphere that prevailed in the Military Transportation Needs Study, with communities falling in line to serve military needs. However, in this case, it presaged more willingness to develop relationships and share data that would actually be beneficial to the community.

In the context of this shift in military participation at planning meetings, staff relationships, more than political relationships, became a key factor in improved urban/military coordination. This was especially the case among staff who were addressing concrete infrastructure problems, for example assessing shared drainage. An engineering professor involved in the Private Infrastructure Working Group was critical
of the pilot project outcomes as a whole because of the lack of commitment to regional coordination. Despite that, she noted progress at the staff level: “What I saw in the infrastructure area was, the best collaboration happened at the engineering level and that problem-solving level, where people could talk about the problems and what was happening rather than at that upper city manager, governor's kind of level.” Stormwater engineer Shanda Davenport, who participated in the Infrastructure Working Group, relates that attempting to resolve stormwater connections rendered the need for staff collaboration clear. In fact, they realized that relationships would be the first order of business, over and above data. The group was already aware of the locations where stormwater was flowing in and out of the base, but collaboration would be necessary to address the impacts on either side. With some effort to identify the appropriate channels, the group was able to follow through on that collaboration, eventually coordinating stormwater data to lay the foundation for mutually beneficial engineering solutions (see next section).

The pilot project also provided a platform for forging staff relationships between military branches. Operating under separate command structures, they were probably more siloed than the municipalities in the region. Skip Stiles comments that recognizing shared vulnerabilities in the context of the pilot project was turning point for coordination across the branches. “They were not coordinated at all. Fort Eustis, which is soggy was not talking to naval station Norfolk which is soggy, because they were different branches of service. Now they've done some combined commands that have started dealing with it, but it was really the pilot project, I think, that brought a lot of these people together so that the army facilities people and the air force facilities people and the navy facilities people were all talking to one another and realizing that they had common issues to solve.”

The pilot helped to foster better relationships between key municipalities and the navy, as well as between branches of the military, but there was still widespread, legitimate criticism that regional fragmentation was a major obstacle. However, Ben McFarlane notes that a similar phenomenon of effective staff relationships occurs at a regional scale; though it might not be immediately apparent, staff relationships are more functional than political relationships, facilitating some regional progress. “There's a lot of sharing of information, a lot of networking at the staff level. Even though sometimes you don't see a lot of very public cooperation at the top level but there's a lot of networking that goes on between different departments and individuals at the staff level.” He makes this comment specifically in relation to a Community Rating System23 user group hosted by the HRPDC, however, it is indicative of a broader interest in cooperation for concrete flood management that seems to transcend political tensions. Though McFarlane does not make the direct connection to urban/military collaboration, evidence of effective regional cooperation is also important for military stakeholders given the tightly interwoven urban and military fabric of the whole region.

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23 This is a FEMA program that incentivizes communities to conduct floodplain management activities in excess of National Flood Insurance Program requirements by offering discounted rates to policyholders.
Staff relationships were considered important enough that in developing the JLUS proposal, the team intentionally included institutionalizing those relationships in the consultants’ scope of work, according to Katerina Oskarrson, the Norfolk Deputy Chief Resilience Officer. Based on HRPDC protocol, military representatives served in a non-voting capacity for the pilot project. But the municipal representatives viewed this inability to fully participate as a shortcoming, and chose to address that going forward. “This JLUS is different. This JLUS involves all levels of government. When we were hiring a consultant for that, that was one of the main things that we asked for. How do you help us to not just do a study, but how do we institutionalize this relationship that we develop over two years?” Based on past experience in flood management planning at the local and regional level, George Homewood, the Planning Director for the City of Norfolk places the greatest expectation on relationships. “Just as the value of the IPP turned out not to be the product of the IPP itself but the relationships that were developed, I'm hoping that the real value of this JLUS is the relationships that are being built between the Navy and its two partner communities . . . and that it allows us to continue.” To a large extent, these staff relationships would mitigate the negative impact of discontinuities in base leadership and the resulting disconnect with the surrounding region.

Data-sharing
For urban and military staff, building relationships has been a key precursor to sharing data and information, an essential component of joint planning. It can be difficult for military installations to share data with municipalities, given obvious security concerns. Even for the Military Transportation Needs Study, installations were unwilling to share origin and destination data for their commuters, citing the concern that neighborhoods with a large military population could become a target (Belfield Interview). Similar security concerns pervade any sharing of detailed demographic or geographic data. However, in light of the reality of flood risk, installations had begun to find ways to share at least some of the relevant data for critical coordination even before the Joint Land Use Study. CPLO Mercedes Holland relates that Little Creek-Fort Story found a way to share data with the City of Virginia Beach in order to address persistent drainage problems. “It was not something that was commonly done before. It was not a standard practice to share defense data with outside entities like that, especially geographically coordinated data. However, we went through the process with the region to get approval to have that particular type of data released to that entity for official use. So it takes a little bit of effort to coordinate to get all the approvals but it can be done in some cases.” Greg Johnson, the City of Virginia Beach stormwater engineer who had been involved in this process, also conveys that the two entities have been working toward sharing data in both directions, with the City offering up their models (Fig.3.9).
Fig. 3.9 The Little Creek/Pretty Lake area served as a useful case study for the Infrastructure Working Group in the Intergovernmental Pilot Project because it featured joint land use authority shared between Norfolk, Virginia Beach and the Little Creek Amphibious Base as well as the joint vulnerability illustrated by three feet of sea level rise and 100-year storm surge. Source: Hampton Roads Intergovernmental Pilot Project.

Susan Conner, Chief of Planning for the U.S. Army Corps of Engineers, Norfolk District, notes that the JLUS structure has facilitated more data-sharing than previously possible. “Specifically, we had asked if we could just know what zip codes both civilians and or sailors originate from to get to the Naval Station. They’ve never been able to have anything on that, now as part of the JLUS they’ve put that together. I don't know if they were forced to do it because of the JLUS or the JLUS initiated that.” This key regional transportation data will inform future decision-making for flood management.
Much of the data-sharing seems to be initiated by requests from the municipal side, but coming together under the aegis of the JLUS did facilitate a recognition of the need for the military to share data as well. In one of the Technical Committee Meetings, Steve Jones, the CPLO for Naval Station Norfolk offered data concerning infrastructure risks in a concurrent Department of Homeland Security study (AECOM, 2018a). Ben McFarlane argues that even though the information exchange can be asymmetrical at times, it is still productive for the region when cities share information with military installations. “We're trying to share information even if we can't always get the information we would like from the military, we can at least give them good information to let them know what we're doing, and what's going on so that they can take it and use it.” This good faith effort is somewhat risky given the history of military demands on the region, but perhaps developing staff relationships will decrease the likelihood of this one-way data-sharing.

**Decision-making frameworks**

In most adaptation planning, deciding which climate scenario to plan to is a contentious process, given the vast range between high and low scenarios, the high degree of uncertainty, and the drastic nature of the consequences. For many, planning to a high scenario is a non-starter as it creates an unimaginable vision of the future. In Hampton Roads urban/military planning, stakeholders explicitly chose to compromise on scenarios, forgoing what they might consider to be the most realistic scenario in order to arrive at the ability to plan at all. CPLO Mercedes Holland reinforces the importance of agreeing on a way forward for a joint planning process. “Ultimately, the number itself doesn't matter. I think it's more the process of being able to plan together at something. That's what we've all agreed to, is we're never all going to agree on a certain number, but if we can agree to a specific point or time frame to plan to and plan together, that's what we need to get to.” While Norfolk Planning Director George Homewood notes a potential risk in planning for slower sea level rise, he concedes that this is a practical compromise position. “With the JLUS, we're essentially looking at one meter of sea level rise. While Norfolk would've been happy to have looked at more, and I had the sense that even the Navy would've been happy to look at a higher level, Virginia Beach, on the other hand, wasn't willing to sign on to looking at more. If what happens is we get to one meter of sea level rise 20 years from now, we've still done a good job of planning for how do we deal with those kinds of things.”

Notes from one of the JLUS Technical Committee meetings reflect the consensus that the most important deciding factors for sea level rise scenarios were arriving at consistency between Norfolk and Virginia Beach and determining scenarios that both localities “were comfortable with presenting to their constituents” were. Allowing for uncertainty, the committee chose to plan to various water levels without attaching those levels to specific years (AECOM, 2017a). Ostensibly, this approach would avoid scaring residents or deterring economic development. On a separate occasion, Virginia Beach Planning Director Barry Frankenfield noted the city’s economic concerns. “I think another big thing is that how do we look to the rest of the world from a place to live and develop. If we come up with a plan that says, we are really in big trouble, we're going to have three feet of water everywhere in 20 years. Well, then the Richmonds, Charlottesvilles of the
world say, "We're much higher we're not going to have any flooding, come develop here."

An engineering professor involved in the Intergovernmental Pilot Project suggests that the Navy wield the BRAC threat, pressuring more municipalities into planning around a common scenario. “I think one of the best things that could happen for this region is that the Navy said, ‘These are the sea level rise scenarios that we want to plan to,’” because then, the communities would be like, “Oh, this is a large part of our economy. We want to keep the navy here. We need to use those planning scenarios to make sure that residents can get to the base and be available as the workforce.” For local adaptation advocates, deploying the BRAC threat appears to be the last resort to achieve their favored adaptation agenda. In the face of regional dissension, this rhetorical move serves as a proxy for invoking top-down planning.

**Seeking Legal Authority**

As noted before, the largest obstacle to urban/military collaboration is the lack of legal authority to build infrastructure across the “fenceline.” As a result, advocates in the climate security community, at times the same champions who have been active in Hampton Roads, have focused on addressing this hurdle. The Hampton Roads-based advocates have attempted to leverage the local climate conditions and planning efforts in their bid to alter federal infrastructure authority, though the campaign is national in scope, and includes numerous actors beyond Hampton Roads. The campaign includes efforts ranging from establishing a Defense Community Infrastructure program to expanding the Defense Access Roads program to requiring vulnerability assessments of military installations. Given the reach far beyond Hampton Roads, these policy efforts and the way in which they relate to local and national advocacy will be addressed in Chapter 5, The Climate Security Project.

**3.3.5 Outcomes**

The Norfolk/Virginia Beach Joint Land Use Study is the most tangible result so far of urban/military collaboration for adaptation in the Hampton Roads region. When recommendations from the 2005 JLUS were implemented in Virginia Beach, they had an extensive impact on land use planning and the built environment so it is reasonable to speculate that the current JLUS could have an equivalent impact. The current JLUS analysis report lays the foundation for land use and infrastructure changes, providing some advantages for adaptation while also risking some adverse outcomes. The first major advantage is the very fact of collaboration between two municipalities with a history of conflict. In addition, the JLUS augments existing vulnerability assessments, providing a more comprehensive perspective on critical public services and infrastructure across those two municipalities. These positive outcomes represent progress on local political divides with deep roots as well as an increase in technical adaptation capacity. In contrast, the adverse outcomes reflect structural inequalities and political divisions that extend far beyond the JLUS and the region.

**Intermunicipal Cooperation**

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In a region with a history of municipal rivalries and light cooperation, any municipal collaboration on a concrete planning process would be noteworthy. However, given the unique history of tension between Norfolk and Virginia Beach, their collaboration is more remarkable. Hearkening back to this troubled history, Virginia Beach Planning Director Barry Frankenfield considers that their collaboration would likely be the most significant outcome of the JLUS. “The biggest issue for us is the cooperation-collaboration between the two cities . . . you would think that's not a big deal but it's a huge deal as far as how we work together or don't work together. We have long-term political obstacles, differences that have not been forgotten. They go back to probably 1963 when the city of Norfolk attempted to annex the entire Princess Anne County and then it went downhill from there.”

Establishing this intermunicipal cooperation was not incidental, but a central part of the JLUS process, largely because it benefits the military partners. As Captain Frantzen notes: “I think the real benefit of the JLUS is that it brings everybody together because in some cases, we're doing bilateral discussions. This brings in multilateral groups. I do a lot of discussions with Virginia Beach but the JLUS includes the city of Norfolk. That gives you a better more holistic view of the problem . . . that's what I really see as the greatest value of the JLUS.” In this case, the JLUS, a bland planning tool for encroachment management, is being used not only to creatively address sea level rise, but to facilitate cooperation between two municipalities with an acrimonious history. This doesn’t overcome the vast socioeconomic disparities between the two and the probability of uneven adaptation benefits, but may begin to create a platform for collaboration, tempering the trend of dissension about everything from lightrail to schools. Of course, in an era of fiscal constraints, this is also a case of expedience. Not only will the municipalities and installations maximize their resources through joint planning, but the municipalities may gain more access to state and federal resources by cooperating. Robert Crum, the director of the HRPDC makes the point in one of the JLUS Technical Committee meetings that state and federal agencies are more likely to fund multi-city projects (AECOM, 2018a). Even if this is only a perception, it may help to motivate inter-municipal cooperation.

*Expanding Vulnerability Assessment*

As one study among many in the Norfolk and Virginia Beach landscape, the JLUS represents an incremental increase in capacity, intentionally building on the groundwork laid by the Intergovernmental Pilot Project, the USACE Coastal Storm Risk Management Study and the City of Norfolk and Virginia Beach’s sea level rise planning (see Sec 3.1). While the municipal and military stakeholders were each involved in many of these studies, the JLUS process provided funding for additional vulnerability analysis of community assets and infrastructure on a broader, more comprehensive scale than these other studies; by definition, interdependencies were of primary concern. The JLUS analysis draws attention to the vulnerability of 1,238 critical assets including schools, hospitals, emergency service stations, and water, waste and power infrastructure, providing a framework for determining intermunicipal priorities. In addition, it adds the weight of the Navy to funding bids at multiple levels of government. While the JLUS itself may be “budget dust” in Paul Olsen’s terms, it can provide a platform to pursue the
“prize” of mission funds (see Ch.5). Even at the local level, agreements arrived at in the JLUS can have an impact on funding. In one Technical Committee meeting, Tom Leahy, a Deputy City Manager for Virginia Beach, notes that not only is it critical to have Navy support in the permitting process, it can also provide an edge in getting funding for Capital Improvement Projects that are already planned (though it’s not clear how) (AECOM, 2018a).

**Increasing Vulnerability**

In spite of these benefits for intermunicipal cooperation and adaptation capacity, there are some clear drawbacks to the JLUS as well. Even though this was a joint process with the potential to serve overlapping community and military needs, as the process has unfolded, community needs appear to be subservient to military needs. Though there are frequent mentions of co-benefits and interdependence in the JLUS materials, in committee meetings, decisions were made to focus on “the nexus to mission readiness.” This was a strategic move to achieve maximum Navy buy-in to potential project outcomes (AECOM, 2018a), with the assumption that it would complement other flood planning efforts. Still, when the stakeholders choose to adopt military priorities as the main filter, they direct momentum, especially for attracting funding, toward infrastructure of high economic value. This filter leaves out considerations of socioeconomic vulnerability which is an explicit priority for the City of Norfolk in the “deconcentrating poverty” pillar of their resilience approach (Norfolk 100RC Initiative Leadership, 2015). In the JLUS analysis, the consultant identified seven sub-areas of Norfolk and Virginia Beach as focus areas for projects, using the blockage of community assets as the main criterion (AECOM, 2018b, pp. 9–2). This approach potentially encompasses a wide set of community needs, as it includes schools, hospitals and emergency services. As a result, one of the areas, sub-area two, which spans downtown Norfolk and neighborhoods to the east, included low-income communities; however during Technical Committee discussions, the decision was made to limit further study to sub-areas 1,3,4, and 5 because these would have the greatest mission impact for the Navy (AECOM, 2018a) (Fig.3.10).
The initial map of potential sub-areas for recommended actions in the Norfolk/Virginia Beach Joint Land Use Study included areas that are socially vulnerable, but the Technical Committee made the decision to focus on areas of greater military value.

Calibrating a planning decision in this manner is not particular to this process, but indicative of wider exclusion in urban/military adaptation processes and beyond. Roy Hoagland who chaired the Legal Working Group of the Intergovernmental Pilot Project, reflected that it represented a lot of good work, but lacked the necessary buy-in from the political leadership of the Hampton Roads communities. He was also critical of the lack of inclusion, noting that at one of the first meetings of the Pilot Project, there were approximately 150 participants, but only five or so were African-American in spite of the very large African-American population in the Hampton Roads region. In addition, the Legal Working Group suggested that the Pilot include Native American tribes in the collaboration, but that recommendation was discarded. Accordingly, virtually all of the stakeholders in the Intergovernmental Pilot Project were white. This is not surprising in a city and region where white people have traditionally held power. In a city that is 45% African-American, Kenny Alexander was elected in 2016 as Norfolk’s first black mayor. The fact that both the IPP and the JLUS were white, elite-led processes, in spite of some conventional nods to public engagement, is symptomatic of a tendency toward “colorblind” adaptation planning. Given Norfolk’s demographics and the history of racial tension between Norfolk and Virginia Beach, this is a critical oversight. Even in the context of urban/military planning, this is an issue that the urban stakeholders could choose to bring to the table.
In one forum for urban/military collaboration, issues of structural racism and inequality were surfaced. The Rockefeller Foundation sponsored a Resilience Value Realization workshop to facilitate the City of Norfolk gaining the most value from Army Corps and Navy led projects. In this venue, stakeholders from the Navy, Army Corps and City developed a Resilience Value Opportunity Statement with a vision for social and economic as well as environmental resilience. Rockefeller sponsored a follow-up Resilience Value Assurance Review to determine whether the ongoing projects were addressing all three aspects of resilience. The workshop involved not only top officials from the region, but outside experts including Kristina Hill, a professor of environmental planning at Berkeley who works on coastal adaptation and environmental justice. At the workshop, she cautioned against the Army Corps’ default position of protecting high-value areas as a result of their conventional cost-benefit analysis. Chief Resilience Officer Christine Morris related that “Kristina did a masterful job opening eyes on how we’ve institutionalized processes that can leave people out (Ruibal, 2017).” As a starting point, Army Corps and Navy leadership considered the social repercussions of adaptation planning, but, it is not clear if this discussion has had any concrete impact. Separately, Colonel Kelly, CO of the Norfolk District, raised efforts to modify evaluation criteria in the traditional Army Corps process as a long-term challenge.

**Dismissing Causality**

Perhaps most problematically for long-term climate prospects, many of the stakeholders engaged in and even championing urban/military collaboration opt for the expedient position of disregarding causality. They advocate for progress on adaptation at the expense of mitigation, forgoing the politically contentious, and substantively more demanding approach of reducing greenhouse gas emissions.

For example, Paul Olsen, former Commanding Officer of the USACE Norfolk District, vows that he is very concerned about the cause, yet in public forums, when the topic of sea level rise became politically heated, he would refocus the conversation toward the fact that seas were rising rather than why they were rising. “When I would get confronted during my public statements, ‘Are you sure? Is it current emissions? What's causing it?’ I'd always back off and I said I'm not a climatologist, it's not my area of expertise but what I am is I'm a strategic engineer and I know it is indeed happening. I know it's happening at 6 millimeters a year, which is 6 centimeters a decade which is 12 centimeters in 20 years, which is about how long a city manager might work so that's the context. We have to plan for this. You can't disagree with the fact that the seas are actually rising here.” Craig Quigley, the director of HRMFFA, takes a similar approach. “You immediately run into political problems when you start talking about why. The tack we've taken is I don't care. I don't want to get into that debate. To some extent, it doesn't matter. It's real. It's happening. Deal with it.”

Even Oceanographer Larry Atkinson, who started the Climate Change and Sea Level Rise Initiative at ODU in 2010, eschews causality, adopting the pragmatic position of a behavioral economist who advised at one of the center’s events, “Don’t tell people you got a problem if you don’t give them a solution.” He argues that it would make no
difference for flooding if everyone in Norfolk started driving an electric vehicle, which is true within a limited timeframe, but ignores long-term impacts. A Norfolk stormwater engineer argues that forgoing climate change in favor of the less controversial sea level rise put the city at a strategic advantage, and that “the issue” at hand is near-term flooding. “We didn’t want to get wrapped around the axle on that. . . . I think we’re ahead of the game by staying away from climate change. We still try to reduce our discussion of that, and try to focus on the issue.”

However, Norfolk City Council member Andria McClellan who has adopted “thriving with water” as a major issue is critical that Norfolk does nothing because politically “adaptation is an easier sell.” She is lobbying for a long-term strategy encompassing mitigation and adaptation because you “can’t be in an area that has so many issues related to climate change and not address this [mitigation].” She also notes that while the city is doing very little about mitigation, the military is addressing it within the confines of their own footprint. Jack Scorby, the Commanding Officer of Navy Region Mid-Atlantic reflected this reality in a recent conference session in which he presented “adapt and mitigate” as Navy responses to climate change and sea level rise in entirely matter of fact terms (Scorby, Austin, Reinhart, Funkhouser, & Olsen, 2017).

Pragmatic programs to reduce greenhouse gas emissions exist throughout all branches of the military, grounded in the assessment that fossil fuels are a national security issue. Fuel convoys are an easy target, and fluctuating costs create budgeting problems for the DoD (Goudreau, 2017). As a result of some organizational change efforts in the military, this matter of fact approach to energy security makes reducing greenhouse gas emissions possible. Outside the fenceline, in Hampton Roads, advocates have harnessed their pragmatic arguments to the immediate benefits of adaptation rather than the long-term benefits of mitigation. While the collaborative efforts between Norfolk, Virginia Beach and the Navy may be on the leading edge of adaptation, collectively they lag on mitigation, setting their resilience goals on a precarious foundation.

3.4 Conclusion: the promise of interdependence and pitfalls of climate security
Joint urban/military planning processes in Hampton Roads offer some useful lessons about how collaboration occurs between organizations with distinctly different missions and asymmetrical power and resources. Recognizing interdependency was absolutely critical to their collaboration for adaptation planning. Crucially, this new aspect meant that their working together could appropriately be considered collaboration. While certainly a power imbalance remains between municipalities and the military, more dialogue and willingness to share data and information marks a stark contrast with previous planning efforts which were joint in name only. The previous iterations in which municipalities submitted to military demands could more appropriately be considered compliance, and at best accommodation, rather than collaboration. While the threat of

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24 In 2018, the Mayor of Norfolk instituted an Advisory Commission on Climate Change Mitigation and Adaptation
25 This leaves aside the problematic question of the military’s enormous carbon footprint, and the uses to which they put fossil fuels.
increased flooding has different implications for municipalities and installations, there is enough overlap that it presents a form of joint existential threat, whereas previously, military withdrawal served as an existential threat to the municipalities. That threat has not disappeared, and the two threats often interact, but local adaptation champions have effectively used both angles, going to great lengths to lend credibility to resilience planning by leveraging their military networks. This approach, as well as more diffuse efforts to depoliticize sea level rise, have been somewhat successful in creating momentum for adaptation planning.

The realization of joint urban/military interests at the leadership level enhances technical adaptation capacity, but fails to address intransigent obstacles of structural inequality and climate causality. In some respects, Norfolk and Virginia Beach policies are at the bleeding edge, but adaptation initiatives continue to reflect the fact that it is far easier to gain buy-in for local, short-term, self-interest. Some municipal leaders recognize this shortcoming, but have been reluctant to tackle the greater challenges to adaptation. In the context of urban/military planning, the greater obstacles represent higher stakes for the municipalities than the military. As municipalities are initiating the urban/military dialogue, this presents an opportunity to include socioeconomic vulnerability and ongoing emissions as central considerations. With their interest in positioning themselves as resilience leaders, the cities of Norfolk and Virginia Beach could harness political will for adaptation to tackle these larger obstacles. It is useful on its own to understand how and why the urban/military collaborations are happening. But it is more critical to assess the outcomes of these collaborations and how they might contribute more socially and environmentally robust adaptation capacity.
In the early 20th century, San Diego grew in tandem with the Navy as local boosters deliberately sought Navy installations as a growth strategy. In that incipient phase of the relationship, San Diego voters were apparently more than willing to accommodate the Navy, donating large tracts of municipal land. Eighty years later, with a diversified economy, that dynamic had changed. As development pressure intensified, civilian leaders have been willing to sacrifice military interests to achieve local growth. As a result, urban/military collaboration for adaptation has not been a natural fit. To a large extent, progress on adaptation has been driven by state policy, even for military installations. At the local level, municipalities and installations maintain a relationship of dutiful neighbors, engaging in the necessary protocols to address common everyday conflicts over traffic and noise. From this position, they are aware of each other’s adaptation efforts, and in some cases are beginning to seek dialogue. At a regional level, a number of climate-related working groups involve naval stakeholders, resulting in limited engagement and some minor collaboration.

The only example of substantive urban/military collaboration is a recent agreement between the Port and Navy to work on sea level rise. This agreement developed as a result of the work of champions on both sides who used Naval involvement in sea level rise planning to lend credibility to adaptation. The Navy has not been a default leader on sea level rise, with their own work sometimes prompted by state requirements, but the perception of their leadership has been useful to increasing momentum. The Port/Navy agreement provoked interest from the surrounding municipalities who have now joined the collaborative bayfront planning process. Though it is too early to assess outcomes, the extent of land and the range of jurisdictions involved could render this an influential agreement. However, as a point of caution, the major regional initiative for oceanfront adaptation has progressed beyond the early stages of sharing information and monitoring. Even in a region that is known for its ability to cooperate, major beach nourishment projects gone awry reveal serious limitations to cooperation.
4.1. A history of economic diversification and regional inequality

4.1.1. San Diego and the Navy
As in Hampton Roads, the Navy became a major presence in San Diego on the cusp of World War I, as urban boosters worked hard to capture Navy largesse to fuel local economic growth. In the early 1900s, city boosters determined that attracting the Navy would be the best way to achieve growth and overcome San Diego’s lagging position behind Los Angeles and San Francisco. Even more than Hampton Roads, San Diego was not “naturally” strategic, as the harbor was shallow and would require major dredging to accommodate naval ships. Even after persistent lobbying, the Admiral of the Navy, George Dewey, claimed that “San Diego’s strategic importance was more apparent than real.” However, William Kettner, a Congressman from San Diego from 1913-21, simultaneously continued to serve as the director of the San Diego Chamber of Commerce; he worked tirelessly to attract Navy facilities throughout his four terms, often benefiting his business associates with the resulting land deals.

In 1915, San Diego held the Panama-California Exposition in Balboa Park, celebrating that the Panama Canal would more readily connect the city to global trade. Architect Bertram Goodhue, hired to conduct site planning and architecture, developed the Spanish Colonial Revival Style to represent the achievement. Impressed by the fair, and San Diego’s favorable climate in comparison to San Francisco, Assistant Secretary of the Navy Franklin Roosevelt was receptive to Kettner’s pitch to move a marine base there. In 1915, Kettner and the Chamber of Commerce fulfilled their campaign to achieve a favorable deal for the Navy; the Navy purchased 232 acres while the City of San Diego determined by a vote to donate an additional 500 (Shragge, 2002).

On the brink of World War I, the City turned over all of Balboa Park for Navy training and after the war, voters once again responded to a Chamber of Commerce campaign to donate land to the Navy in exchange for a promise to build bases (Shragge, 2002) (Fig. 4.1). When the Naval Training Center moved to a permanent site at the north end of San Diego Bay, Goodhue built the installation in Spanish Colonial Revival style with arcaded buildings framing courtyards. This installation now has a second life after having been closed in the 1993 Base Realignment and Closure (BRAC) round. Reincarnated as “Liberty Station,” the mixed-use development capitalizes on the colonial revival architecture, featuring arts organizations, museums, and a food hall.

26 Naval construction from 1916-1918 exceeded that in the previous hundred years. In that brief period, Navy yards and stations more than doubled in value from $211 million to $469 million. http://usnhistory.navylive.dodlive.mil/2017/05/04/building-the-naval-shore-establishment-during-wwi/

27 The Department of the Navy houses two separate service branches, the U.S. Navy and the U.S. Marine Corps.
Through the 1950s, San Diego’s defense dependency continued and the Chamber of Commerce prioritized military investment as an economic development strategy. But since then, the economic base has significantly diversified to include innovation, logistics, and tourism in addition to the military-industrial base. The shift has been large enough that the Chamber of Commerce no longer necessarily throws its weight behind Naval interests. When the Airport Authority proposed using part of a Marine base for a new airport, the Chamber supported that proposal. In response, military supporters within the Chamber decided they would need their own military-aligned institution and broke off to form the San Diego Military Advisory Council (SDMAC). Now with the Pivot to Asia, military growth could be an economic boon to the region, but it could also become a stressor as more military personnel put further pressure on the housing supply and transportation infrastructure. The earlier alignment between military interests and the local growth coalition has faded.

4.1.2. Regional divisions

In coastal California, real estate values have skyrocketed over the last several decades, contributing to a housing affordability crisis. In the San Diego region, this has contributed to the political divide between coastal and inland areas. Coronado councilmember Bill Sandke describes the demographic change in stark terms, explaining why Navy affiliation in the town has plummeted from approximately 75% to 25% since the 1970s. "In a community that in the early '70s was 70% Navy, 75% Navy, affiliated

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28 In 2012, the Obama Administration issued defense strategic guidelines rebalancing U.S. military and diplomatic interests from Europe and the Middle East to the Asia-Pacific region.
either through retirement, civilian employment or active duty, the transition from that early '70s to today's Coronado where that same affiliation is somewhere between 20% and 25%, you have a community that's less, I'll say, pro-Navy by default so that presents some challenges for everyone. The Navy hasn't gotten any smaller here but when my father bought his house here in 1966, he was a lieutenant. The people buying houses here are now retiring captains and retiring admirals, and for them it's a stretch. What was once a $50,000 starter home in the early '60s is now a $2 million tear down. The economics of that are very complicated for junior officers, for enlisted people. Basically the change in property value has made it impossible for this to be the Navy town it used to be.” As a result of this growing economic divide, there is less Navy representation in the town, and there is a larger socioeconomic difference between those who commute to work at the bases and those who live in Coronado, eroding any sense of common cause.

The gap is particularly stark in Coronado, but obtains to the whole region. Randy Bogle, Executive Director of the San Diego Military Affairs Council (SDMAC), notes that this will increasingly become a problem as more military personnel are assigned to San Diego. “This is an expensive place to live. It's a very high cost of living, and there's not enough housing for the civilian population. Well, there's not enough housing for anybody. Therefore, the cost of housing and apartments, it's the seller's or the renter's market. The rentees, and the people that are buying are on the short end of the stick. For young enlisted people, junior officers, that can be pretty challenging here.” Those at the lower end of the military pay scale are forced to find housing at an increasing distance from the base, often far out in East County where they are locked in to a commute of more than an hour in each direction. Some sailors have even found that living in Tijuana is the only affordable option (Fisher, 1997) (Woiwode Interview).

The exception to the increasingly expensive coast in the San Diego region is the working class town of Imperial Beach, the southernmost municipality, bordering Mexico. Chris Helmer, the Imperial Beach Director of Natural Resources, paints the contrast between Coronado and Imperial Beach, the small towns that sit at opposite ends of the Silver Strand (Fig.4.3). “They say Coronado is where all the retired admirals go. It changes the culture of the community. On city council, you have a whole bunch of retired admirals or captains . . . but we have a bunch of environmentalists and surfers who sit in our council.” Imperial Beach has one of the highest poverty rates in the county, and a median income of $48,000. However, the city is beginning to experience gentrification pressure with housing prices doubling between 2013 and 2018. The city is just beginning to search for policy remedies to maintain Imperial Beach as an “affordable, blue-collar, beach community (Solis, 2018).”

Though socioeconomic and cultural differences persist in municipalities across the region, they also have a history of working together. Relations are not always harmonious, for example Coronado recently sued Imperial Beach over a sewer line to the new Navy Coastal Campus. However, in general, municipalities are not as entrenched in their fiefdoms as in Hampton Roads; this may be related to less salient racial antipathy in San Diego. There are many instances of productive regional engagement, and decision-makers generally remarked on a willingness for municipalities to work together. Phil
Gibbons, the Energy and Sustainability Program Manager at the Port, reported that other regions in California ask about the San Diego “recipe” for cooperation; he posits it may be simply that with fewer municipalities it is more feasible to work together, but “there seems to be something special about San Diego” and the ability to collaborate.

4.2 Recent development dynamics: growth displaces military needs
As the San Diego economy has become less defense dependent, decision-making processes over land use and transportation conflicts reveal a willingness to disregard or even challenge military interests. This has given rise to new military-aligned institutions, but they remain in a defensive position, attempting to protect military interests against civilian encroachment. While land use and transportation issues tend to produce conflicts, in the area of environmental services there have been more synergies, building on a half-century history of communities providing services to installations. In recent decades, state environmental regulations have fostered more proactive cooperation between municipalities and the installations they serve. As in any community with a substantial military presence, everyday interactions over issues such as noise and minor traffic concerns are a constant fact of doing business; communities and installations generally maintain a good relationship to address these and regularly apprise each other of plans with potential repercussions for operations. As in Hampton Roads, military and civilian life are inextricably intertwined in the professional and community realms.

4.2.1. Land use: development pressure displaces military interests
The 2005 Base Realignment and Closure (BRAC) Commission presented a major threat to Hampton Roads. Based on the Commission’s assessment, the Department of Defense closed Fort Monroe, a centuries old, historically significant army installation, and would have closed Naval Air Station Oceana had it not been for the City of Virginia Beach accepting extreme land use regulations at the eleventh hour (see Chapter 3). However, in each BRAC round, there are also winners in the competition for federal dollars. San Diego was a beneficiary, netting $30 million in construction at Point Loma to support the relocation of a command from an installation closure in Texas. In a Navy press release, the Commanding Officer of Naval Base Point Loma notes San Diego’s ability to accommodate growth. "The 2005 BRAC action on Naval Base Point Loma is a critical part of the planned growth of the Navy in the San Diego area over the next 10 years. Our base has significant excess capacity left over from the Cold War days, and it is imperative that we do our part to relieve the stress felt by the other two bases in San Diego, as the number of ships and commands continues to increase for the metro area (Naval Base Point Loma Public Affairs, 2007)."

After BRAC, San Diego maintained and even expanded its defense base as a result of political maneuvering at all levels of government (Davis, 2006)(Voice of San Diego). When the Obama Administration initiated the Pivot to Asia, it virtually guaranteed that in the near term, San Diego would continue to be a net beneficiary of defense development. Whereas in Hampton Roads, the threat of a future BRAC perpetually looms over every economic development and land use conflict, in San Diego, that concern is negligible. Randy Bogle, the Executive Director of the San Diego Military Advisory Council notes the potential for consolidation of some military installations within the region, but
confirms with confidence, “From a military standpoint, they’re not going to leave, they're not going to move from here.” If anything, the San Diego region will suffer from an increased housing and transportation burden as more military personnel move into the region, exacerbating the housing affordability crisis.

Even if there were a future BRAC-mandated closure, the real estate market and previous experience with BRAC in San Diego suggest that this would likely be a commercial opportunity rather than a liability. San Diego’s historic Naval Training Center was slated for closure on the 1993 BRAC list, and eventually closed in 1997. After a lengthy redevelopment process, it reopened as Liberty Station, a mixed-use, master-planned arts and culture district. While there have been disagreements over the degree of public benefit from the project, it has been commercially successful, becoming a “regional destination” for shopping and dining and employing over 5,000 people (Office of Economic Adjustment, 2017). The development received the 2011 Prix d’Excellence Award from the International Real Estate Federation (FIABCI). With this success, it has overcome the typical economic concerns surrounding a BRAC closure (Raffesberger, 2013) (Fig.4.2).

![Fig.4.2](image)

**Fig.4.2** Naval history is part of the successful rebranding of the former Naval Training Station as Liberty Station, now a regional dining and shopping destination. Photo by author.

In the San Diego region, encroachment on military installations has occurred at their edges on a piecemeal, lot-by-lot basis as elsewhere, but given the development pressure, there have also been formal proposals to convert large tracts of military land to civilian use. In January 2003, the newly formed San Diego County Regional Airport Authority began its search for a new airport site in response to projections that the current airport, highly constrained by downtown development, would exceed its capacity by 2022. The Airport Authority chose to pursue a joint use proposal for part of Marine Corps Air Station Miramar in spite of significant pushback from state and federal legislators and the mayor of San Diego (Davis, 2006). However, according to Michael Woiwode, at the time a defense industry executive sitting on the San Diego Chamber of Commerce, the
Chamber supported the Miramar proposal. In response, Woiwode and five others co-founded the San Diego Military Advisory Council (SDMAC) in 2004 “to be able to take positions in support of the military quickly.” They led a successful “No on Prop A” campaign to defeat the proposal to dedicate 3,000 of the Marine Corps Air Station’s 23,000 acres to a commercial airport. Even if voters had approved the advisory ballot measure, politicians and military personnel in the region largely viewed it as a political and legal impossibility. Major General Michael Lehnert, commander of Marine Corps Installations West, stated emphatically, "No amount of dialogue or wishful thinking will make this joint-use proposal work (Downey, 2006)."

Given this reality, mobilizing SDMAC may have been unnecessary. However, the formation of the organization reflects that while San Diego may be known as an epicenter of defense, urban decision-makers are at least as likely to eschew defense-industrial interests in development decisions as to promote them. Unlike HRMFFA, the counterpart organization in Hampton Roads which primarily protects regional growth under the auspices of supporting the military, SDMAC seeks to protect the military mission from competing civilian interests. The current Executive Director of SDMAC raised this comparison, explaining their differing missions as if the SDMAC position is apolitical. “We don't do political stuff, we just don't. We never have and right now there is no reason for us to do that. Now, we are a little different scenario. We're a little more on the positive side with not a lot of chance of anything going away. Good chance, quite a bit of growth. So, it's a little different than their side of the pie over there. They've had some closures . . . and it hurts. I get it, I mean I understand it, so we're not the same. They're a very active group. Obviously, they're trying to do good things for the military, only in the best interest of the people too, whether you're military or not. They're most interested in keeping jobs there. For us, it's probably a little of both. But we really want to make sure that what's here, is able to do everything they need to do to train (interview).”

While SDMAC clearly exerts political pressure both formally and informally, Bogle’s diagnosis of the two regions’ divergent relationship to their defense-industrial base and the prospect of BRAC is accurate. SDMAC defends local military interests while HRMFFA deploys offensive tactics to maintain a potentially eroding military base. Given their level of defense dependency, Hampton Roads has much more to fear from a BRAC round. In the case of the Miramar Airport Proposal, the military held their ground against civilian encroachment; however, according to a recent inventory of encroachment issues in the region, this proposal to displace Marine use is still seen as a concern. The report notes that “although it was voted down as a site, the concept of Miramar as a civilian airport is still being discussed (San Diego Association of Governments, 2016).”

In a similar reflection of civilian ambivalence toward military needs in the San Diego region, several municipalities rejected a Joint Land Use Study (JLUS) which Navy Region Southwest proposed in 2013 to include the cities of Coronado and San Diego and three installations. When the proposal was floated, municipal representatives were reluctant to engage because they opposed ceding any local land use authority. Though the municipalities chose to reject it, they decided to form a Military Working Group within
the structure of SANDAG\textsuperscript{29}, the regional planning organization, in order to address ongoing encroachment issues (Clough Interview). Much like in the case of the Miramar Airport proposal, the urban/military conflict over land use gave rise to a joint institution to attempt to diffuse future issues.

The discussions surrounding the proposed JLUS reveal municipal concerns, especially on the part of the City of Coronado. Steve Chung, the Navy Region’s Community Planning Liaison Officer, presented an overview of the JLUS process to the newly formed Military Working Group; however Woiwode, who had become a Coronado city councilmember in 2008, suggests that the Navy’s intentions were opaque. “When we heard that the Navy was talking about championing a Joint Land Use Study, we in Coronado tried to find out what it was about, what would be the thrust? We got nothing. Navy wouldn't tell us.” While Woiwode had actively advocated for Marine interests against the airport proposal, in his new position, he sought to protect local property interests from any further regulation. When Chung presented the JLUS, Woiwode raised enough questions to turn the San Diego representative, Laurie Zapf, against it as well. He recounts, “we couldn't see a benefit to it, that is, those of us who were sitting in the SANDAG Board Meeting. We certainly don't need more layers of governance. We don't need other people telling us what we should do. The OEA [Office of Economic Adjustment] studies that result in dealing with BRAC issues or dealing with business issues in the community, those make sense. We weren't hearing any of that. We’re hearing land use -- everybody is jealous about land use. Don't tell us how to use our land.”

While this response may seem like simply knee-jerk NIMBYism, it was rooted in longstanding tension over the effects of navy airspace regulations in Coronado. Just as in Hampton Roads, the Navy developed Air Installation Compatible Use Zone (AICUZ) recommendations for Coronado designating high noise and crash zones. As a result, some existing development was deemed “incompatible,” potentially hindering redevelopment and reducing property values (Tierney, 2016). Woiwode suggests that it was preposterous to apply these new regulations to long extant buildings. “The really telling story is that you show the Hotel Del Coronado and the houses on Ocean Boulevard before there was a [Naval Air Station] North Island and you say, now, a hundred years later you want to tell us that these are non-compliant? Who is it that's not complying?” Bill Sandke, who became a city councilmember later, echoed this while also noting that Coronado zoning accommodates adjacent Navy uses through height and floor area restrictions.

Though Woiwode was quick to point out the seeming absurdity of applying new regulations to a built up community, he speculates that the Navy is not concerned about Coronado, but “protecting this process . . . because there is a lot of pressure to develop around Miramar, Tejon Ranch, Lemoore. They have a lot of places that they feel are vulnerable. They don't want to see any precedent set that's going to make it more difficult

\textsuperscript{29} The predecessor to The San Diego Association of Governments (SANDAG) was designated the region’s Metropolitan Planning Organization in 1970 to fulfill federal transportation planning mandates. Now SANDAG includes 18 municipalities and the county government, which undertake regional land use, transportation, and environmental planning.
for them to deal with the real issues for them.” This interpretation is consistent with both the rejected JLUS proposal and the rejected airport proposal. Though the military held their ground in the case of the airport and was unsuccessful in the case of the JLUS, each of these incidents illustrate that development pressure presents mounting competition to military land use in the San Diego region. Municipal decision-makers are adequately empowered by the value of their property tax base and other revenue streams to discount military requirements for the direct use of land and even for limitations on adjacent uses. Whereas the Hampton Roads region had a history of deferential accommodation of military interests, in the San Diego region, decision-makers were just as likely to prioritize other forms of development.

4.2.2. Transportation: base access creates traffic conflicts
Predictably, just as in Hampton Roads, transportation is the greatest common denominator for interaction between personnel who work on base and the surrounding communities. As in most cities, traffic congestion is a major frustration, so resolving it has become a point of shared interest. However, attempts at joint military/civilian transportation planning have not been particularly successful. In 2010, SANDAG, the Navy, and the Metropolitan Transit System devised an express bus route targeted at sailors clustered in Murphy Canyon military housing who commuted to Naval Base San Diego. However, after a year pilot run, the “Murph Express” was terminated due to insufficient use (San Diego Association of Governments, n.d.). While these types of programs have been incentivized, Michael Woiwode has noted that base leadership are reluctant to impose requirements on sailors on shore leave. Cliff Maurer, the City of Coronado Director of Public Services and Engineering, has worked with the Navy to develop alternative modes such as ride-sharing, but he is skeptical of their success in spite of “earnest efforts,” remarking that even civilians who work on base, and are not subject to deployment at a moment’s notice, are “very resistant. Part of that is just California culture, people who are really wedded to their cars.” Coronado councilmember Bill Sandke notes that the commanding officer of Navy Region Southwest rejected a proposal for a carpool lane at a major chokepoint, the Coronado Bridge, because it would require some flexibility in arrival times during an adjustment period.

In Hampton Roads, shared transportation impacts became a platform for recognizing interdependence, but in San Diego they remain a source of quotientd conflict. Nancy Bragado, a former long-time planner with the City of San Diego, notes that military expansion typically raises concerns about impacts outside the fenceline. “The military expansion is welcomed from patriotic and economic development perspectives and San Diego takes pride in its military history and ongoing role. But there can be growth-related tension when more personnel are brought into the base and region without parallel investments in local infrastructure and neighborhoods. There is a recognition of benefits but also a desire to mitigate some of the impacts of growth.” As in the case of land use impacts, even pro-growth urban decision-makers do not perceive the military contribution to the economy as an unmitigated benefit. In spite of a general consensus that the military contributes to the economy, transportation and land use disagreements over everything from daily base access to the major airport proposal make clear that pro-growth does not neatly equate to pro-military.
This may be partly a result of the way in which transportation conflicts reflect regional socioeconomic divides, making the issues more difficult to resolve. Relations between the City of Coronado and Naval Base Coronado exemplify this. As Coronado has become increasingly unaffordable, military personnel live further away, submitting to long commutes and rearranging their schedules to avoid traffic. Maurer explains that this creates conflict between wealthy residents and lower-income military commuters. “They live out in East county. . . . Some live as far as Temecula and up in that area, really long commutes. I’m sensitive to it. . . . We have traffic coming into the community very early in the morning. For the residents, they’re obviously concerned about their quality of life at those early hours and sometimes they don’t appreciate how challenging it is for military families to have a good quality of life as a result of the steep economic factors in the San Diego Region.” In this context, congestion is not a shared experience to recognize and resolve; rather the lack of nearby affordable housing turns the military commuters into a daily irritant, outsiders disrupting tranquil coastal life for resident retirees.

In spite of these conflicts, there is some evidence of current cooperation. In one project, the Navy is implementing traffic signalization on the highway adjacent to the new Coastal Campus to mitigate the impacts of increasing traffic on neighboring Imperial Beach. In another, the SANDAG Military Working Group is undertaking a Regional Military Base Multimodal Access Strategy to address worsening congestion from population growth and the Pivot to Asia, which is projected to increase “conflicts between base operations and civilian development (San Diego Association of Governments, 2018).” The strategy proposes to relieve congestion at key base and port access points by providing alternatives to driving alone, reducing greenhouse gas emissions while also improving livability. These cooperative efforts are both addressing fairly circumscribed issues, but may achieve some progress toward alleviating military/civilian transportation conflicts.

4.2.3. Environmental services: cooperation for operational efficiency
Parallel to the land use and transportation conflicts, there is a history in the region of substantive urban/military cooperation over solid waste and sewage. In 1959, the City of San Diego began leasing land from the Department of Defense for the South Miramar Landfill on what is now Marine Corps Air Station Miramar. The terms of the lease included free disposal for all military installations bordering San Diego including Miramar, Naval Base San Diego, and Naval Base Coronado. Lisa Wood, a planner who has worked in the Environmental Services Division of the city for 30 years, describes the relationship with the military which has intensified over the past several decades. “My department obviously has a very close relationship with the military. The Department of Defense is my landlord, which means that some of the things that we need to do permitting-wise actually do require an act of Congress.”

In 1989, California passed AB 939, The Integrated Waste Management Act, requiring increasing levels of waste diversion for all municipalities, reaching 50% by 2000. Cities would be fined by the state if they failed to comply with these requirements, however,
with free disposal, the military had no incentive to contribute to this effort and would potentially take up much of the City of San Diego’s waste allowance. According to Wood, this became such an imperative that a recycling specialist on the City Environmental Services staff was assigned to work with the military. When city staff reached out to Naval Facilities Engineering Command (NAVFAC) who administered the Miramar lease, they found a sympathetic waste program manager who convinced the military installations that it was in their interest to work with the city to comply with AB939. “Leslie [McLaughlin] immediately understood the issue, and she translated it into language that the military could appreciate. That was, ‘When Miramar reaches capacity, y’all are not going to have free disposal anymore. It's going to cost you a pretty penny.’ . . . But because they see . . . that it's in their best interest, we really have a good relationship with the military now. They really do have a good program.” As in other military efficiency bids, from energy to water to waste, cost savings are the convincing factor. To maintain this relationship and head off future conflicts, Wood now holds quarterly meetings with MCAS Miramar staff to address mutual issues.

Similarly, the City of San Diego has managed sewage for local navy installations at the Point Loma Wastewater Treatment Plant since 1963. Through the early 1990s, the plant was treating sewage to the level of “advanced primary,” and dumping it far out in the ocean. Not only was this in violation of federal and state environmental regulations, but the sludge was being dried in the open on Fiesta Island in the middle of San Diego Bay. The City was already paying mitigation fees to the Coastal Commission, but the Commission was set to increase the fees by $2 million per year, finally motivating the City to address the issue (Wood Interview). Dave Schlesinger, a retired officer working in the City of San Diego Public Utilities Department assembled a “tiger team” to address the crisis and proposed relocating sludge treatment to Miramar, adding sewage to the existing solid waste lease. Wood relates that the City and military quickly cooperated to address the problem. “The tiger team included military. We had people all the way from Washington DC coming into these meetings so it was a, “We're going to work together to solve this problem.” We have a lot of cooperation from the military. It was within the city's leasehold but it was going to require an amendment to the city's lease because while we had been dealing with solid waste there, we had never dealt with sewage sludge there before.” This effort resulted in the Metropolitan Biosolids Center a “state-of-the-art” plant adjacent to the Miramar Landfill which is now being upgraded through the Pure Water Program to contribute to a “droughtproof” local water supply (The City of San Diego, 2018). As in the case of improving solid waste diversion, state environmental policy imposed a sufficiently substantial financial penalty that it encouraged cooperation.

The City of Imperial Beach has also had a longstanding agreement with the Navy to manage sewage, dating to 1963. Based on that, Imperial Beach created a new agreement at the Navy’s request to transport sewage from the new Coastal Campus facility. However, the Campus is actually located in Coronado, though it neighbors Imperial Beach. With an increasing interest in recycling water locally and preventing a private company from profiting from the sewage transiting their city, Coronado sued Imperial Beach over the proposed service (Rivard, 2016). Chris Helmer, the Director of Natural Resources for the City of Imperial Beach suggests that unlike Coronado, the City of
Imperial Beach had little self-interest in the project, but was intent on serving the Navy, “The Navy says they want us to take their sewage, we'll take their sewage. We'll make it happen.” The Mayor, Serge Dedina, maintains this line as well, suggesting, “Imperial Beach provides sewer service to benefit the Navy. It's our contribution to support our military’s defense of our national security (Farnsworth, 2016)." The lawsuit settled, and Imperial Beach will retain rights to transporting the sewage, largely because a new alignment would have required additional state and federal environmental assessments and congressional approval, delaying the project (Helmer Interview) (Farnsworth, 2016). To accommodate the influx of sewage, Imperial Beach will upgrade their pump stations, with the Navy paying a proportional share of the costs.

Both the City of San Diego and Imperial Beach engaged in mutually beneficial agreements with local military installations. In the case of the longstanding solid waste and wastewater arrangements between the City of San Diego and the Navy, state environmental policy precipitated crises that motivated increasing cooperation. As a result of regulatory enforcement with financial consequences, the two parties did substantively engage to improve waste management. The new agreement with Imperial Beach was a fairly straightforward provision of services that had the side benefit of allowing the city to minimally increase their infrastructural capacity. At the same time, the conflict between Coronado and Imperial Beach over the resource of Navy waste illuminates how increasing environmental risks may intensify intermunicipal competition.

4.2.4. Everyday interactions

Urban/military relations in the San Diego region have consisted of intermittent conflict over land use and transportation as well as cooperation over environmental services motivated by operational efficiencies and financial penalties. Development pressure is such that there have been tense conflicts over civilian demand for military land. Transportation issues are exacerbated by the growing socioeconomic divide in the region and the lack of affordable housing on the west side of the county. Military construction at times becomes a pawn in intermunicipal competition as cities face resource constraints.

In the face of this patchwork of conflicting demands, decision-makers in municipalities and the Navy Region maintain a steady, formalized relationship. Steve Chung, the Community Planning Liaison Officer for Navy Region Southwest, attributes that to a contemporary military paradigm emphasizing community engagement, of which his position is an integral part. “The new paradigm that’s been in place for many, many years is to ensure that you sustain that engagement, sustain that dialogue regardless of what issue or items of interest, may be the item for that month.” Putting that into practice, there’s a “regular drumbeat” of meetings between installations and regulatory agencies, either monthly or quarterly.

On the civilian side, decision-makers in the cities of Coronado, San Diego, and Imperial Beach suggest that their cities have a good working relationship with the Navy. Coronado City Councilmember Bill Sandke reports that even though the military mission is always the first priority, the Navy is quick to address any issue that arises between them.
“On a myriad of issues, our relationship with the Navy is significantly solid. We are more than neighbors because neither of us is going anywhere, so on occasion we have disagreements, but for the most part we have a very good working relationship with the Navy. If we have a problem, the base commander answers the phone and addresses it right away. The current command structure at Naval Base Coronado is tremendously open and has held a great deal of public outreach mostly over the aircraft noise issues, but they are very committed I think to a good relationship with City of Coronado.”

Tait Galloway, a planner with the City of San Diego who has worked on air use issues with the military for over a decade suggests that the city always works closely with the military and the military takes any issues that arise seriously. While the City does not explicitly have a military liaison, Galloway serves in that role informally; he knows all of the community planning officers in the region, and in turn military personnel frequently reach out to him as a first point of contact.

Though San Diego is not defense dependent to the extent of Hampton Roads, defense is still woven into the economy and culture of the region. As a result, it is clearly a good public relations move for any city staff or elected official in the region to affirm that their city has a good relationship with the military. However, Chris Helmer, the Director of Natural Resources for the City of Imperial Beach goes further than bland platitudes, emphasizing that the Navy relationship with Imperial Beach far exceeds their monthly military affairs meetings; they take it so seriously that they treat it as a mission. “I think having a regular military affairs meeting creates the right forum to have this relationship. The Navy obviously puts a lot of resources into maintaining these community relationships with the city as well. . . It's the same as the mission, our mission is to have a good relationship with the city of Imperial Beach and we're going to have a good relationship with the city of Imperial Beach whatever it takes. Imperial Beach is going to have a special event and we're going to make sure the Navy comes to play at the special event because that makes us look good . . . They definitely don't skimp out on it and try to cut corners to have a good relationship with the city.” Prepared to address potential conflicts, installations generally make every effort to head off community issues as they arise.

4.2.5. Community/military networks
Just as in Hampton Roads, military and civilian life overlap significantly in the San Diego region, in both the professional and community realm. Regional planner Jane Clough describes what she considers an emblematic narrative of how the military and community become intertwined. “If you ask three people in a room, I'm sure that two of them have some connection to the military, either active military or they're in an industry that's supported by the military or they're supporting the military. I would say an inordinate number of former military and especially Navy, but even Marines and everything else stay here afterwards or they find a way back. They end up [with the] classic [story], "My boyfriend was in the Navy and then got out of the Navy and got a job in an industry associated with what he was doing there, but for a private contractor and stayed and raised a family." I think his story is very common. It's a nice place to live. So yes, I would say it's completely entrenched.” Discussing this entanglement in more
instrumental terms, Randy Bogle, the Executive Director of the San Diego Military Advisory Council (SDMAC) suggests that the “military serves twice,” once by defending the country and a second time by living, shopping and participating in community institutions in the region.

It is also common for retired officers to leverage that leadership experience, pursuing second careers in local business or government, and often both. While this is not surprising, it has a notable influence on organizational culture, inside knowledge, and agendas. For example, Mike Woiwode transitioned from serving as a Captain in the Navy Reserve, to director of DoD marketing for an aerospace technology firm, then co-founded the San Diego Military Affairs Council, and served two terms as a Coronado City Councilmember. As an advocate for military interests, he opposed the Miramar Airport proposal, though he subsequently opposed the Joint Land Use Study, in that case making local property interests in Coronado a first priority, switching interests to mirror his role. Similarly, Cliff Maurer served as the Commanding Officer of NAVFAC Southwest and Regional Engineer for Navy Region Southwest and then became the Public Services and Engineering Director for the City of Coronado, where the City Manager touted Maurer’s Navy experience as an asset.

When Maurer describes Coronado’s positive relationship with the Navy, his experience clearly plays a role. “We meet regularly. My last tour of duty I was commanding officer of Naval Facilities Engineering Command Southwest so all Navy, Marine Corps, infrastructure, engineering services, energy and the like for the six southwestern states. I know all the people in this area. We have a good relationship.” Phil Gibbons, the Energy and Sustainability Program Manager with the Port of San Diego recounted that there is a long tradition that the Port Commissioner from the City of Coronado is retired Navy. In accordance, Garry Bonelli, the current commissioner, is a retired Navy SEAL and Rear Admiral, while also serving on the SANDAG board and as chair of the SANDAG Military Working Group.

As in Hampton Roads, this common transition from military to civilian leadership positions facilitates relationships and fosters understanding of the organizational culture of the military. The ongoing, constructive formal and informal community/military relationships suggest some latent potential for further cooperation which has only been selectively born out.

4. 3 San Diego adaptation planning: consistency emerges

4.3.1 The state of urban/military engagement for adaptation
In California, state climate policy is so influential that understanding that institutional context is a necessary precursor to situating urban and regional adaptation. State policy is galvanizing adaptation, but not necessarily collaboration. At the local level, very little collaboration exists between municipalities and installations, though they maintain a relationship of attentive neighbors. At the regional level, urban and military stakeholders engage in dialogue about adaptation through various working groups, resulting in minor
collaboration. The one exception to this relative lack of interest in urban/military collaboration is a recent Port/Navy Memorandum of Agreement on sea level rise.

**California state policy: the thousand pound gorilla**

As in the case of improved management for solid waste and sewage, there has been a steady march of state policy promoting mitigation and adaptation. This has largely motivated independent adaptation on the part of municipalities and the military. Some very minor urban/military cooperation has been a byproduct as well. For example, the SANDAG Shoreline Working Group which includes municipal and navy stakeholders received funding from the Senate Bill 1 (SB1) “gas tax,” to develop Regional Sea Level Rise Guidance for Transportation Infrastructure. State and regional grants increasingly require that recipients are undertaking climate planning; this may be expected to encourage some increase in collaborative adaptation as jurisdictions attempt to strengthen their bids for state funds. Coronado is one of only two cities in the San Diego region that still had not developed a Climate Action Plan as of mid-2017, but both Cliff Maurer, the Director of Public Works and Bill Sandke, City Councilmember note that puts the city at a disadvantage for receiving grants.

Sandke describes that the lack of a climate plan has become a liability for the city. “The new requirements for this grant money -- and it’s actually a SANDAG program -- grant money require that a city either be actively engaged in creating a climate action plan or have one. If you don’t have those things, you don’t qualify for those grant moneys. That has my attention, because you hate to leave money on the table that would make your town more pedestrian friendly, make the bicycle traffic more orderly. That’s troubling for me, I’d like to see us move in that direction. Not necessarily just because it’s to get the grant money, but because it’s the right thing to do.” Responding to this pressure, in December 2017, Coronado City Council began to develop a scope of work for a Climate Action Plan.

In 2013, the state of California passed Assembly Bill 691, “Proactively Planning for Sea Level Rise Impacts” which mandates that grantees of public trust lands, including cities, counties and districts undertake vulnerability assessments, estimate the financial impacts of sea level rise, identify adaptation measures, and report their findings to the State Lands Commission. Retired Rear Admiral Len Hering, the former Commander of Navy Region Southwest, is now an active advocate for climate action and an Advisory Board Member to the Center for Climate and Security. Based on his familiarity with both Virginia and California, he contends that AB691 is the “principal piece of legislation that . . . separates California from what is happening in Virginia (Hering Email).” Adaptation planning in California cannot be understood without reference to this bill.

In addition to AB691 and several other state bills that have recently promoted climate planning, the California Coastal Commission, formed in 1972 to regulate coastal development, has enormous influence on adaptation planning, particularly in the area of sea level rise. The Commission requires that every coastal municipality develop a Local

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30 such as sanitary, water, or port districts
Coastal Program for Commission approval; municipalities then retain the authority to issue development permits in the plan area. For some public trust lands, the Commission issues permits directly and for federal lands, they determine consistency. In 2015, the Commission unanimously adopted Sea Level Rise Policy Guidance which informs how sea level rise should be addressed in all Local Coastal Programs and Coastal Development Permits. The Commission has recently been controversial for promoting “managed retreat,” even to the extent that they denied a permit for the City of Coronado to build a public restroom on the beach (Sandke interview). The City of Del Mar, a small, wealthy beachfront town in northern San Diego County is actively fighting the Commission over proposed retreat, recently passing a resolution to pursue their own approach to adaptation (Mulkern, 2018).

Given its extensive authority over coastal land, the Commission continually arose as a defining influence on adaptation planning. Asked about the key drivers of adaptation in the region, Serge Dedina, the mayor of Imperial Beach, referred conclusively to the state. “For us, on coastal stuff, it’s obviously the Coastal Commission and the California Coastal Conservancy. It’s clear that the State of California’s driving it. The federal government was facilitating that, because of our estuary and with NOAA, a lot of planning efforts. But it's very clear from us, on our side, the jurisdictional side, the mandate, the requirements are coming from the Coastal Commission. If you want to update your local coastal plan you have to do this stuff. For me it's been a really positive exercise in planning for the future, it's given us this amazing opportunity to start thinking about how we need to change our city to adapt to the changing environment, and have a more realistic and in-depth evaluation of coastal flooding, a chronic condition, which we're already dealing with. For me, that's been really helpful.”

Bill Sandke, a Coronado City Councilmember, seconds this, noting that the Commission is instrumental in sea level rise planning. “The big gorilla, the thousand-pound gorilla in all this when it comes to sea level rise is the Coastal Commission.” Mark Nevitt, a Navy Judge Advocate who was involved in the Hampton Roads pilot project underlined that the presence of the Coastal Commission separates California from Virginia. “The California Coastal Commission has been very forward leaning on these issues . . . we don't have a Cal Coastal in Norfolk, which makes it a little bit of a vacuum.”

More surprising than the Coastal Commission impact on local planning, for the Navy, the Coastal Commission was also a defining influence; this contradicts the perception that the Navy is a leader in their own right on sea level rise (see Ch. 5, The Climate Security Project). In 2015, the Navy finalized plans for a new $1 billion SEAL training center (Silver Strand Training Complex South) with 1.5 million square feet of buildings on a 600 acre campus. The campus is on an isthmus known as Silver Strand which connects Coronado at one end and Imperial Beach at the other and houses two other significant

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31 Even though military land is under federal jurisdiction, military developments are required to effectively comply with state standards under the “federal consistency” provision of the Coastal Zone Management Act in states that participate in the National Coastal Zone Management Program.
naval installations. The narrow sandy strip separates San Diego Bay from the Pacific Ocean and is just over half a mile wide where the new campus will be located (Fig. 4.3).

Fig. 4.3 The new SEAL Coastal Campus or Silver Strand Training Complex South is at the neck of the Silver Strand isthmus separating the cities of Imperial Beach and Coronado. Source: Naval Base Coronado Environmental Impact Statement, 2014.

While the location alone would seem to prompt some analysis of coastal risks, Chris Stathos, the Regional Environmental Coordinator for Navy Region Southwest suggests that sea level rise was not even a factor in Navy planning until the Coastal Commission raised the issue. “When the coastal campus, a very large development on Silver Strand that supports basically a whole new complex for Navy special warfare . . . when that came up and we submitted our project to the Coastal Commission and we had to get that through them, "Hey, what are you guys doing about the sea level rise?" Well, we had to
In the Navy planners’ first attempt to incorporate sea level rise in response to this request, rather than engaging in realistic flood modeling, they used flood maps from the NOAA Sea Level Rise Viewer which operates on a simplistic “bathtub model (Fig. 4.4).” This treats the oceans as a simple pool of water, translating three feet of global mean sea level rise directly to three feet of local sea level rise. Given the effects of waves, currents, erosion, and storms, this is not how local sea level rise would actually operate; there is a whole science of “downsampling” to create more accurate models of local climate risk from global models. Jim Nakagawa, the planner for the City of Imperial Beach, voiced his concern over this inadequate response to the Coastal Commission. “. . . when I wrote a whole lot of comments and criticisms of the EIS, finally, Wes [the community planning liaison officer for Naval Base Coronado] said, ‘Well, we inserted some flood maps into our EIS.’ When I looked at them, I could tell they were NOAA's Sea Level Rise Viewer. . . . To me, that's not adequate. . . . It [NOAA bathtub model] doesn’t depict what could happen in extreme storm events. I still don’t know if the campus facilities are going to be built to withstand future sea level rise, because most of the damage doesn’t come from bathtub scenarios.”
In the Environmental Impact Statement for the Silver Strand Training Complex South (SSTC-S), the Navy originally forecast sea level rise risk with the NOAA sea level rise viewer, an approach that the California Coastal Commission deemed inadequate. Source: Naval Base Coronado Environmental Impact Statement, 2014.

In a Coastal Commission report in the fall of 2014 staff agreed with Nakagawa’s criticisms. The Commission denied the consistency determination the Navy was seeking.
for multiple environmental shortcomings including a lack of information on sea level rise. Not only were the NOAA maps inadequate, but a DoD study of sea level rise impacts at Naval Base Coronado (Chadwick, 2014) that the Navy planners had attached worked against them, indicating a level of risk they had not yet addressed (Fig. 4.5). The Commission insisted on a site specific analysis because “the results of this study appear to provide additional evidence that coastal flooding and erosion associated with sea level rise could threaten portions of the Coastal Campus development in the future (California Coastal Commission, 2014, p. 10).”

After the Navy supplied additional material, the Commission eventually granted the consistency determination noting that “the site would not be at risk of inundation within the design life of the project assuming three feet of sea level rise (California Coastal Commission, 2015, p. 3).” The Commission chose to set aside concerns that future coastal erosion might prompt the Navy to install “shoreline protection devices,” accepting the Navy’s response that “it has no plans for shoreline armoring in the future.” A group of environmental organizations expressed disapproval of this move in their Conservation Voting Chart, criticizing that “the Navy refused to agree to a 'no new seawall' policy in the event that their projections were not sufficient to protect the facility from future sea level rise. Sadly, these issues did not convince the Commission that it should deny consistency.”

The Navy clearly has embedded technical expertise, even initiating their own “Task Force Climate Change” as of 2009, but in this case, state requirements rather than inside knowledge motivated consideration of sea level rise. Stathos indicated that the Navy now refers to Coastal Commission Sea Level Rise Guidance to design more resilient buildings and the Navy Region Coastal Coordinator has developed expertise on sea level rise in response to Coastal Commission provisions. Retired Rear Admiral Len Hering, formerly the Commander of Navy Region Southwest, attests that this matter has had a lasting influence on the region’s approach. “I will tell you that NAVFAC would be forced to consider sea level rise in the next EIS [Environmental Impact Statement]. They will not submit another EIS to the Coastal Commission without that [SLR].”

Not only did state requirements have an influence at the level of the region, but they may have had an influence at the level of the Pentagon as well. Hering and his team wrote a letter in 2007 to Assistant Secretary of the Navy for Installations and Environment B.J. Penn arguing that the DoD should account for the incremental costs of integrating sea level rise into facility planning and design. According to Hering, the DoD did not respond immediately, but slowly accumulated evidence from each of the services that this was the case. Of course, California’s leading edge adaptation policy has a major influence on local planning; it is more surprising that it is substantially affecting federal installations. The Navy, with the vast resources to construct a $1 billion Coastal Campus touted for its green features, might be expected to be the “thousand pound gorilla” in the adaptation realm, but in fact it is the California Coastal Commission that is driving the Navy to meaningfully incorporate sea level rise into their planning.
Municipalities and installations: dutiful neighbors

At the level of municipal adaptation, collaboration with neighboring military installations is negligible. For the most part, state adaptation planning requirements and incentives have influenced municipal and military adaptation independently of one another. At most, decision-makers in each setting extend the formal relationships they have developed to address ongoing issues such as noise and transportation, acting as “good neighbors.” In some cases, there is not even dialogue about adaptation, much less collaboration. However, this may change with all of the bayfront municipalities participating in the adaptation planning process initiated by the Port and Navy (see Sec. 3.1.4).

The City of Coronado has lagged on adaptation planning, so it is perhaps unsurprising that the City has not been communicating with the Navy. Coronado City Councilmember Bill Sandke is careful to note that given the city’s positive relationship with the Navy he would expect they would be cooperative if approached. At this point, there has been no discussion at the city to Navy level, though he adds the caveat that region to Navy communication may be more useful. “They’ve [the Navy] certainly done an awful lot of studies and made us aware of a lot of work that they’re doing. There just doesn’t seem to be a tremendous amount of cross-pollination between the City of Coronado and these Navy efforts. We’re bookended between these two very important military installations and yet we don’t seem to be having a lot of city to Navy communication. Now the Navy may see its role more regionally. Whether the base commander needs to talk to the city manager of Coronado is one thing, I’d be much happier to know that the Navy Admiral is talking to the regional working group that’s administered by the Port of San Diego related to the bay.”

The City of Imperial Beach is slightly more engaged with the Navy than Coronado, perhaps simply because they have made more progress on adaptation planning. Imperial Beach conducted a sea level rise assessment in 2016 and is updating its Local Coastal Program (LCP) and preparing a Climate Action Plan in the 2017-19 timeframe. Dani Boudreau, the Climate Lead at the Tijuana Estuary adjacent to Imperial Beach is one of the stakeholders for the LCP process. She noted that at a recent meeting, there was agreement that the Navy should be at the table, especially because some flooding in Imperial Beach originates on Navy property. “Really trying to open up those communication channels has become pretty prevalent, and I think will continue to be.” Chris Helmer, the Director of Natural Resources for Imperial Beach suggests that thus far, the relationship has been one of “good neighbors,” with the Navy acceptance of sea level rise providing some political leverage. “The Navy is very concerned about sea level rise, a lot of this infrastructure is very vulnerable. How the Navy responds to it affects how our residents respond to it. The fact that the Navy is so accepting of the potential threat of sea level rise on operations and addressing it upfront supports our residents in doing the same thing for our jurisdiction as well. . . . We’re just being good neighbors with them so as to keep ourselves informed of what are the policy directions of discussions that we are having in regards to sea level rise, in regards to storm damage, in regards to response to emergencies.”
Nancy Bragado, a long-time planner with the City of San Diego who is now a consultant working on the Imperial Beach Local Coastal Program update, suggests that the interest in protecting Imperial Beach’s coastal resources is mutually beneficial to the City of Imperial Beach, the Navy and others. “Because Imperial Beach is surrounded on three sides by water, the City has to continually monitor and plan for sea level rise to minimize projected impacts. The City is focused on taking a systems approach to building resiliency to sea level rise, including collaborating with the Navy, SANDAG, and other agencies to work toward long-term solutions. The City is looking for strategies that advance economic, environmental, and community goals. When those goals can be designed for mutual benefits with others, there are more funding opportunities and opportunities for success.” Given the level of Navy investment in Imperial Beach and the region, they have a significant stake in how the sea level rise strategies are developing.

Taking advantage of informal connections, the City of Imperial Beach was able to make use of a Navy resource in conducting their sea level rise vulnerability assessment. Jim Nakagawa, the Imperial Beach planner, was aware of Bart Chadwick’s study of vulnerability at Naval Base Coronado which he had conducted while at Space and Naval Warfare Systems Command (SPAWAR). Nakagawa asked their consultant to reach out to Chadwick to share some of his modeling information. Fortunately for the city, Chadwick had designed the research so that it would not be classified and was willing to share. Boudreau notes that this was a huge benefit for the city. “That was tremendously generous, and it really helped us in terms of assessing the city because they had run models for parts of the city already because they're directly adjacent. Those are models that a city the size of IB could have never afforded without SPAWAR being open to sharing their results.” This impromptu sharing of a sea level rise model was the one tangible example of municipal/Navy collaboration that climate advocates in the region could recall (Fig.4.5). It was an ad hoc occurrence, completely dependent on personal relationships, good will, and the foresight of a single scientist designing defense research to avoid it being classified.
Fig. 4.5. The City of Imperial Beach Sea Level Rise Assessment integrated information from the SPAWAR model that Chadwick developed to assess the impact of sea level rise on military installations.

The City of San Diego was an early adopter of climate planning in the region, approving their first Climate Action Plan (CAP) in 2005. The most recent CAP, approved in 2015, only mentions the military once in a provision for sharing data with a range of other government entities. In this plan, the military is not in any way identified as a useful reference for the city. The planner who lead the San Diego adaptation planning process since 2016 noted that it could be useful to involve military stakeholders in the process, but that has not yet occurred. At this stage, large and small municipalities bordering the military rarely view them as a resource, much less a potential partner; at most, cities have the very limited goal of initiating dialogue. Imperial Beach, with their relative lack of resources, has been slightly more proactive, but has only derived a benefit from sheer happenstance.

Regional groups and military stakeholders: limited engagement
Unlike municipalities, regional institutions involved in adaptation have facilitated some urban/military dialogue, resulting in some minor collaboration; in these cases, military stakeholders regularly fill a seat at the table, sometimes consistently maintaining a presence for years.

The San Diego Foundation is the major community foundation in the region with a portfolio of programs ranging from arts to health and housing. Emily Young, now Executive Director of the Nonprofit Institute at the University of San Diego, was hired to implement an environment program there in 2000. The foundation introduced their Climate Initiative in 2006, at which point only two cities in the region, Chula Vista and
San Diego, had begun any climate planning. In 2011, the Foundation funded ICLEI – Local Governments for Sustainability USA, to conduct a Sea Level Rise Adaptation Strategy for San Diego Bay. ICLEI undertook stakeholder consultation to develop a comprehensive vulnerability assessment and recommendations for adaptation strategies across all sectors involved in the bay. This study has since become a major touchstone for adaptation planning in the region, a resource commonly referenced in other climate plans. The organizers of the ICLEI study identified the Navy as one of the key stakeholders in the bay as they have regulatory authority over 1,900 acres, almost half of the land area. The Navy was not included on the steering committee which was comprised of local public entities, the five cities on the bay as well as the port and airport. However, three Navy representatives participated in the stakeholder working group and one in the technical advisory committee. Surprisingly, the ensuing recommendations suggested a very limited scope for Navy involvement which perhaps reflects legal constraints to joint planning. Only one strategy out of more than 60, a regional assessment of flood risk on contaminated sites, directly included the Navy.

To build on the momentum from this report, the San Diego Foundation temporarily housed a Public Agency Steering Committee which included a Navy representative alongside the cities, port and airport. When this committee produced a research agenda for sea level rise to provide adaptation decision support to planners, the Navy was not explicitly mentioned in any of the research priority areas. The San Diego Region Climate Collaborative had also recently been formed, so the steering committee shifted to that organization and continued its work as a sea level rise working group. Since then, the San Diego Foundation’s interaction with the Navy has been insubstantial. Nicola Hedge, director of the environment program, describes the relationship. “I think our interactions have certainly not been as strong as with other local cities, other public agencies locally, nor have we really tried as deeply to nurture and foster those relationships, but we have, through certain projects, really tried to promote more collaboration.” When the DC-based Center for Climate and Security convened a symposium in San Diego, Hedge participated in order to “bring more attention to the overlap between local and regional climate action, and the interest of the security community.” In the Foundation’s climate report, San Diego, 2050 is Calling, they elevate climate leadership efforts in many sectors, and the military is briefly highlighted as one of them (Fig.4.6); for the foundation, the military is only a minor player, consistent with their broader mission to foster “collective community action.”
As the sea level rise working group continues under the umbrella of the Climate Collaborative, environmental staff from the Navy Region do attend meetings, though Laura Engeman, the founding director of the Climate Collaborative, suggests their participation is limited. “For the most part, they're listening in. There's not a lot of feedback from them in terms of what they're working on and how it fits in, but I think that more so it's establishing . . . a sense of trust . . . . So I think over time they're starting to begin to sort of trust that dialogue that happens there. Then reaching out specifically to some of my working group members offline to follow up on things that they've heard about.” She expects that as projects in jurisdictions abutting the Navy ramp up, there will be more interaction over specific questions, and notes that currently the question of greatest interest for coordinating jurisdictions is what plans, if any, the Navy has to pursue “hard armoring” of the shoreline.

Dani Boudreau who participates in this sea level rise working group as well as the
Imperial Beach Local Coastal Program Update notes a similar dynamic, that the group is in the very early stages of trying to initiate dialogue with the Navy as well as the Port. “We need coordination. The Navy is a big piece of that. Obviously, they own a large section of coastal land here . . . if an adjacent jurisdiction chooses to do beach nourishment or something like that and that moves on to another property, then that's bad news, or it could be good news depending on which way the sand is moving. There's been a lot of talk about how do we engage the Navy, the Port, how do we get folks to the table because the reality is we can't do it in isolation.”

Though participation is limited at this point, Boudreau proposes that it may develop into more substantive collaboration, with the Navy serving as a key actor in pooling financial resources. She is quick to reject the notion that funding would come from the DoD, but insists that no single authority could fund adaptation alone. “I think with adaptation the big reason a lot of folks need to work with the Navy is because no city in this county, potentially in this state . . . can afford to adapt on its own. We simply cannot. There's billions and billions of dollars that we're going to have to rethink our infrastructure, so if there's any way in which we can identify the areas of agreement and collaboration and a financing mechanism for these strategies, it benefits everybody all around. But you have to really think carefully about what types of strategies people can coalesce around. I think that’s where we’re at right now: trying to identify those areas where we can pool our resources.”

From its inception in the 1980s, the SANDAG (San Diego Association of Governments) Shoreline Working Group had been exclusively dedicated to shoreline erosion, planning and monitoring major beach nourishment projects, including one that went notoriously awry when Imperial Beach was replenished with heavy sand that ended up closing the mouth of the Tijuana River. As of 2017, the working group began to change their approach. Serge Dedina, the Mayor of Imperial Beach and Chair of the Working Group describes how they are mainstreaming adaptation planning into new infrastructure projects. As a result, the working group is now one of the key regional bodies addressing adaptation. “SANDAG's undergone a sea change in its approach. Before it was dump sand on the beach. Now it's really talking about doing this adaptation and resiliency work and integrated infrastructure development. Their whole thing is, if you improve a highway, you're making the wetland that it goes through more resilient, you're doing dredging work, and you're doing the active transportation bicycle lanes on the side. They're taking a pretty progressive approach with Caltrans as well as the Coastal Commission to try to integrate planning, which I think is really smart.” Reflecting this new intent, in 2018, the group changed their charter to officially include other sea level rise adaptation strategies in addition to sand replenishment.

The Shoreline Working Group includes two navy representatives who are “certainly active participants,” attending every meeting, according to Sarah Pierce, the Regional Environmental Planner who coordinates the group. In March of 2018, a NAVFAC staff person gave the first presentation from the Navy perspective to the working group, outlining the Navy approach to sea level rise and proposing engagement with the City of San Diego, Coronado, SANDAG and the Port. While the Climate Collaborative provides
a platform for cities to share best practices at the staff level, the Shoreline Working Group helps to elevate coastal issues to the council level, so Navy participation there might be expected to have more impact. Though urban/military engagement in these regional groups appears minor so far, stakeholders on both sides are beginning to propose more collaboration.

**Port/Navy agreement: substantive collaboration**

One important exception to the ad hoc consultation in these regional institutions is a Memorandum of Agreement to work cooperatively on sea level rise which the Unified Port of San Diego and Navy signed in May 2018. This is not precisely an instance of municipal/military collaboration, however the Port is in some key ways similar to a municipality. In 1962, when the Unified Port of San Diego was created, it was given management authority over the bayfront superseding the five municipalities that previously had jurisdiction (Fig. 4.7). Those municipalities now work closely with the port, often partnering to invest in waterfront redevelopment. Under Coastal Commission regulations, the Port regularly produces a master plan which serves an equivalent function to municipal Local Coastal Plans in defining terms of development. The port has jurisdiction over 2,400 acres of land and 3,500 acres of water accommodating two major marine terminals, three shipyards, a cruise terminal, a convention center, numerous hotels and tourist attractions, a mix of commercial and industrial real estate, and public recreation space.

The Port is undertaking an extensive integrated planning process from 2013-2019 to update the Port Master Plan from the original version which has been regularly revised since 1980. In a bid to “modernize” their approach to planning, the Port Commissioners are pursuing an ostensibly uncontroversial vision to achieve “a world class Bayfront providing a well-balanced variety of opportunities in and around the Bay that attract people, provide public benefits and optimize the return on investment (Port of San Diego, 2017a).” Consistent with current planning best practices, they are integrating uses and reimagining how the waterfront can operate as both environmental service and public space.

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32 The five bayfront municipalities are: Chula Vista, Coronado, Imperial Beach, National City and San Diego.
Fig. 4.7 San Diego Bay land use authority is divided between the five bayfront municipalities, the Navy (in dark blue) and the Port District. Map by Sham Sthankiya based on information from the Port Master Plan, 2017.

The Navy is the second largest landholder in the Bay with regulatory authority over 1,900 acres divided between three installations and their support facilities. The Navy and Port land areas are based on the ICLEI Strategy which defined a planning area around the San Diego Bay.
Port Energy and Sustainability Program Manager, suggests that as the two largest landholders which are both defined by water dependent uses and share sea level rise risk, the Port and Navy have a “natural relationship.” The State of California emphasizes natural resource management and retreat in their adaptation planning based on Coastal Commission guidance; Gibbons notes that according to the Port’s assessment, the state does not adequately address water dependent industries which make a huge contribution to regional and state economies. In a letter to the California Natural Resources Agency, Jason Giffen, Assistant VP of Planning and Green Port, submitted multiple concerns regarding the state’s adaptation strategy, Safeguarding California (Giffen, 2017). Giffen argues that the adaptation plan prioritizes social, natural, and cultural aspects of the state’s public trust doctrine over the navigation, commerce, and fisheries aspects which fall under the Port’s purview. He notes “we are concerned the 2017 Update does not adequately distinguish and prioritize water-dependent and water-related uses that are important economic engines for California. These uses may require specific structural strategies to become resilient to climate change impacts.”

Gibbons stresses that the Port will continue to advocate for protection, including structural strategies, in some areas. Their first resilience policy concept, “maintain shoreline armoring” will likely remain a central part of their strategy given their critical water-dependent infrastructure (Port of San Diego, 2017b, p. 117). However, when the Port began adaptation planning in 2018, they identified the full array of responses to sea level rise: protect, accommodate, and adjust (a euphemism for retreat). This pragmatic approach is consistent with the wide range of uses and types of waterfront land under Port management, but does allow that some critical facilities might have to be relocated rather than protected in place (Diego, 2018b, p. 56). Still, the need to preserve the option of armoring to maintain waterfront operations is likely another point of commonality between the Port and the Navy.

Pursuant to the Sikes Act34, the Port and Navy had been working together under an Integrated Natural Resource Management Plan (INRMP) for over twenty years. As a result, both agencies understood the staff and culture of the other allowing them to broker a Memorandum of Agreement (MOA) in just seven months, record time for bureaucracies of their size (Gibbons Interview). Also contributing to this quick turnaround, the main champion at the Port, Commissioner Rafael Castellanos, was about to assume the chairmanship and was able to push his agenda forward. Referring to the INRMP, Castellanos emphasized, “We’re not re-inventing the conceptual wheel here on how to approach this type of planning.”

The MOA establishes their joint activities, “to share information, re-evaluate the best available scientific information and modeling related to sea level rise, and collaborate to identify complementary adaptation policies and measures,” concluding that the partners will “jointly plan for and leverage resources to address sea level rise (Fig.4.8).” The MOA also notes that this agreement is the first of its kind on the West Coast. While it

34 Passed in 1960, the Sikes Act, “Conservation Programs on Military Installations” mandates that the DoD cooperate with state and federal agencies to promote conservation on military lands.
does not specify the East Coast precedent, Phil Gibbons, the Energy and Sustainability Program Manager at the Port who helped craft the language, was in fact referring to Hampton Roads; in light of their urban/military collaboration, he thought it would be inappropriate to refer to the San Diego agreement as the first of its kind.

MEMORANDUM OF AGREEMENT
BETWEEN
COMMANDER, NAVY REGION SOUTHWEST
AND
SAN DIEGO UNIFIED PORT DISTRICT

Subj: Memorandum of Agreement Regarding Coordination and Cooperation Related to Potential Sea Level Rise in the San Diego Bay Region

Ref: (a) (if applicable)

Encl: (1) (if applicable)

1. Purpose.

The United States Navy, acting through the Commander, Navy Region Southwest (CNRSW or Navy) and the San Diego Unified Port District (Port), as the major owners of land and submerged waters of the San Diego Bay, each independently recognizing the importance of planning and preparing for the potential impacts of sea level rise, and believe that through cooperation and coordination of efforts the parties can more effectively and efficiently meet their independent goals and mandates. The parties, collectively and individually, have undertaken leadership roles in addressing potential sea level rise in and around the San Diego Bay to improve their resiliency. This Memorandum of Agreement (MOA) formalizes the parties’ cooperation and coordination towards studying, planning and preparing for potential sea level rise consistent with the intent of the San Diego Bay Integrated Natural Resources Management Plan (INRMP).

2. Background.

In 2002, the CNRSW and the Port approved the INRMP, a joint initiative in recognition of the need for partnership in stewardship to address a variety of environmental issues, while supporting the ability of the CNRSW and the Port to accomplish their missions. The INRMP is a long-term, collaborative strategy between the CNRSW and Port for managing the San Diego Bay’s resources.

Fig.4.8 The Memorandum of Agreement between Navy Region Southwest and the San Diego Unified Port District discusses their common interests in planning for sea level rise.

The MOA makes no mention of municipalities, however when making a statement about the formal agreement, the Commanding Officer, Admiral Lindsey, chose to extend the implications of the agreement beyond the Port and Navy. “The potential impacts of sea level rise do not recognize jurisdictional boundaries and demand collaboration among all stakeholders. We look forward to continuing to work closely with the Port, local municipalities, and other interested parties on this challenge to ensure the resiliency and viability of our Navy installations, San Diego Bay, and its surrounding communities.” This statement has turned out to be more than a talking point. The MOA implies that a fresh collaborative process would be formed for the Port and Navy; while that is occurring separately, the MOA has also had a bearing on existing stakeholder
engagement occurring through the Port’s Sea Level Rise Ad Hoc Committee.\textsuperscript{35}

After press coverage of the MOA, some of the bayfront municipalities contacted the Navy wanting to establish their own bilateral MOAs, but from the Navy perspective, that was not feasible (Wilson Interview). Instead, at the first Sea Level Rise Ad Hoc meeting after the MOA was signed, Navy biologist Walt Wilson suggested that the five bayfront municipalities should be there in addition to the tenants, non-profits, and other bay stakeholders, because the others could not make decisions without them and they had “the power to take action.” The Port invited them, as well as SANDAG and the Coastal Commission, and they all attended the next two meetings. According to Wilson, the greatest benefit of the MOA so far has been the unintended consequence of bringing the entire group of stakeholders to one table which helps to create a shared foundation for first steps such as monitoring. Eager to continue the collaboration, the stakeholders are attempting to institutionalize this expanded process, proposing to convert the ad hoc committee into a permanent committee situated outside of the environmental committee because of its broader importance.

4.3.2 Adaptation collaboration: drivers

Collaboration has been less substantial in the San Diego region than in Hampton Roads; for now, the drivers of collaboration are weaker, though that may be changing with the Port/Navy MOA. Experience of impacts is almost always a key impetus, so the lower visibility of immediate climate impacts certainly plays a role. The Port/Navy agreement provides the greatest evidence of drivers so far. Two of these, championing collaboration and framing climate politics, are substantially similar to Hampton Roads. Framing, while an important part of the Port/Navy collaboration has had a broader influence as well. A third driver, seeking consistency, is distinct from Hampton Roads. Consistency emerges as a dominant catchword just as interdependence did there. This motivation is visible in the Port/Navy agreement and beyond.

\textit{Champions}

Champions appear to be operating more disparately than in Hampton Roads, likely because there has not been a central, lasting, multilevel planning process where they would regularly make contact and leverage each others efforts. While many in Hampton Roads criticized the lack of concrete outcomes from the Intergovernmental Planning Project, the fact that it served to build relationships did have an impact on subsequent planning.

For the Navy and the Port, the Port’s Environmental Advisory Committee, formed in 2006 to address bay conservation, has provided a forum for ongoing cooperation. The committee, chaired by Port Commissioner Rafael Castellanos includes a range of stakeholders from NGOs, public agencies, universities and the Navy. Retired Rear Admiral Len Hering, a long time champion of sustainability programs, is one of the

\textsuperscript{35} That committee was recently formed as a subset of the Environmental Advisory Committee which includes a range of public, private and nonprofit stakeholders in the environmental health of the bay.
committee stakeholders in his capacity as Executive Director of the Center for Sustainable Energy. As the commander of multiple navy regions throughout his career, Hering led programs on renewable energy, water efficiency and waste diversion, winning a Presidential Award for Leadership in Federal Energy Management in 2005. After retiring from the Navy, as a vice president at the University of San Diego, he led implementation of the largest solar energy system on a private college campus.

At meetings of the Sea Level Rise Ad Hoc Committee, a recently formed subcommittee of the Port’s Environmental Advisory Committee, Castellanos began to see the Navy as a potential ally; he appreciated that both Hering and Navy biologist Walt Wilson “elevated the urgency” of sea level rise planning. As a result, Hering and Castellanos met outside of the committee, along with Navy environmental staff Walt Wilson and Chris Statthos to strategize Port/Navy collaboration. Castellanos, who has championed the Port addressing sea level rise, entered the meeting with the understanding that he could leverage the Navy’s commitment to adaptation to increase Port commitment because some Port commissioners did not view climate change as a priority.

Over the course of the meeting, Castellanos realized that the Navy’s adaptation work was less organized than he had understood and that some apparent Navy leadership was in fact motivated by the Coastal Commission (see Sec. 3.1.4). In light of that, the crux of the conversation came down to how to enroll the Navy in coordinated planning even though they were not necessarily leading on adaptation of their own initiative. Based on his extensive inside experience as well as ongoing conversations with the current Commanding Officer on the subject, Hering recommended approaching him from the straightforward, pragmatic perspective that without the Navy, the waterfront planning would be “incomplete” and that the Navy would simply be less effective in coordinating their own resilience planning if they did not work with the Port. Satisfied with this strategy, Castellanos arranged a meeting with the Commanding Officer (CO), Admiral Lindsey, where they discussed sea level rise as a threat to their operations and decided to move forward with a formal agreement (Gibbons Interview).

While the prominent champions have been in leadership positions, another advocate has been working behind the scenes. Garth Nagel, a senior planner for asset management at NAVFAC, has persistently invested whatever time he can in educating himself and bringing sea level rise to the attention of others even though it has been a “collateral duty.” He made a pitch to the CO for funding to develop sea level rise models specific to the five installations for which he coordinates the installation development plans, and that request for funding was formally submitted to higher ups. For Hering and Castellanos, this existing budget request became a simple existing avenue for the Navy to put resources toward a Port/Navy partnership. Since the MOA was signed, sea level rise has been sanctioned as part of Nagel’s portfolio.

Even though the Port and Navy clearly have shared interests as the two largest managers of bayfront land, both committed to a “working waterfront,” if it were not for Hering and Castellanos serving as champions for this collaboration, it would not have been formalized in a Memorandum of Agreement. Instead it would have remained at the level
of dialogue like the other regional committees on which stakeholders of both agencies serve.

The other notable champion for urban/military collaboration on adaptation, Coronado City Councilmember, Bill Sandke, has been somewhat of a lone voice, working upstream against a lack of interest in the issue. He relates that his constituents are predictably more concerned with immediate issues. “There is no sense of urgency amongst the people that send me emails. I get emails about bike lanes, I get emails about density, I get emails about parking, I haven't got emails about sea level rise vulnerability... I've been elected since 2014. I have received comments around town thanking me for being a leader on the issue locally, some anecdotal appreciation for it, but I think as an overall community issue, it's not one that we have a great deal of interest in. I think the larger policy challenge for a person like me or any other elected is to make policy related to something that's 20, 30, 40 years down the line a real threat. But the people currently don't see it as a problem.” As a volunteer compensated with a meager stipend, he has limited time to dedicate to his goal of better coordination between the two adjacent Navy bases and the City of Coronado itself. However, he championed a Coronado sea level rise vulnerability assessment which passed by a 5-0 vote in 2017, overcoming general reluctance to engage in climate planning. He also sits on the SANDAG Shoreline Working Group advocating for more coordination between municipalities and the Navy on beach nourishment. He touted the Port/Navy MOA in a commentary piece for the local paper suggesting that this would bring an important technical resource to the table. “This is great development for our region and adds the heavy-lift research already done on behalf of our closest neighbors, NAB [Naval Amphibious Base] and NASNI [Naval Air Station North Island] to our resource portfolio.”

**Framing**

As in Hampton Roads, where adaptation advocates used the Navy to help frame climate politics, advocates in San Diego have seen the main value of the Navy in serving as an apolitical messenger. This was especially apparent in Rafael Castellanos’s attempt to galvanize more support for sea level rise planning at the Port. As a Port Commissioner, his main agenda was to increase Port momentum, and he saw Port/Navy collaboration as one means to achieve that. Castellanos makes the utility of Navy support very explicit when he comments to Hering and Navy environmental staff that he will reference it in conversations with other port commissioners. “There was an Admiral Locklear... 2012, 2013 he said this is the greatest threat to global security, sea level rise. Fortunately, I can point to you guys and say, “If they're thinking about it, we definitely need to be thinking about it.” Later in the conversation, he adds, “I need to figure out how to politically get the commission on board to drive forward in an effective way and I'd love to be able to say, "And here's the Navy. In parallel, they're doing all this stuff.”

Castellanos became concerned when he realized that the Navy’s work was less organized than he had expected, but Hering, Stathos and Wilson indicated that Navy action, even on a project by project basis, still signaled a stake in the issue that could be leveraged. More important than the level of Navy commitment to the issue was the fact that the Port and Navy clearly had common interests in addressing sea level rise. Later, formalizing
Port/Navy cooperation, Castellanos returned to the concept that Navy support for adaptation is effective because the Navy is publicly viewed as apolitical. “If we’re successful, the role will be huge because the Navy is considered apolitical, people don’t view the Navy as having biases that are politically driven, they’re not suspect that this is a hoax, all of the skepticism that you hear, the Navy enjoys this immunity from that type of attack, having the Navy on board as a messenger and a validator is huge (Castellanos Interview).”

Positioning the Navy as an effective rejoinder to the “climate change is a hoax” ploy indicates that the “apolitical” position of the Navy may be increasingly useful in a polarized political environment. Later, in a public forum, the Port Board of Commissioners Meeting where the MOA was passed, Castellanos reiterated that Navy concerns about sea level rise demonstrate the need to overcome the political quagmire, and used this as a preamble to underscore the more tangible concern about livelihoods tied to the bay. Doing this, he uses the Navy not just to serve large institutional interests, but very human interests. “There are a lot of politics associated with sea level rise, climate change but the reality is when you have someone like the Navy that understands the significance of this and is planning for this irrespective of the politics, that’s something we all need to pay attention to. . . it is a security issue, a homeland security issue, a national security issue, but it’s important to do this because we need to preserve our quality of life. The Port of San Diego contributes over $8 billion a year to the regional economy, 68,000 jobs, 24,000 of those jobs are working waterfront jobs, good jobs, median income, $70,000 a year. Those are family supporting jobs.”

Castellanos’s consistent approach to leveraging the Navy as “apolitical” was the strongest, however other regional climate leaders echoed this stance in milder form. Nicola Hedge, the director of the environment program at the San Diego Foundation, sees collaborating with the military on projects as a priority after building relationships with local cities and public agencies, and that the military can be a valuable source of public relations on the issue. “We've tried to include the military in our work to build local government capacity and collaboration but also to raise public awareness in support of these issues. Public opinion polling has shown us that the navy and military professionals are, in general, pretty trusted messengers in our region. Where there is alignment, they can be helpful and positive messengers for the work that they're doing and how it relates to broader regional issues.”

Serge Dedina, the Mayor of Imperial Beach, situates the military contribution to his own municipality’s adaptation in slightly broader terms. Not only does he see them as a useful political ally, cooperating with them on infrastructure has created an opportunity to pursue some minor physical adaptation. “I think if you've seen that base [the Coastal Campus] . . . the big picture would be that's a great model for me, to have them as an ally, next to us, to help us, also incentivize us to continue this process. If we have the military doing it, we're doing it, so it makes it politically safer and it also gives us an excuse to start moving some infrastructure around. Having to fit that sewer pipe into that base, it means it gives us some money and the possibility of moving a sewer line that's near the beach, just on the street here, a block inland. That's been really positive.” Even where the
military approach to climate change is piecemeal, the outside perception of Navy leadership can be an effective political tool for local adaptation advocates to raise awareness and galvanize support for adaptation projects, either in conjunction with the Navy or alone.

**Seeking Consistency**

In Hampton Roads, the byword for joint urban/military planning was interdependence. Municipal and military decision-makers consistently repeated the impact of infrastructural and community connections: if roads were flooded, military personnel couldn’t physically commute to work on the base, but more importantly, risk to their families would prevent them from working. Each time, the essence of the narrative was that the base and community were inextricably intertwined. Through his various leadership roles in the Navy, Clifford Maurer, who became the City of Coronado Public Services and Engineering Director, was likely exposed to this discussion; he recounts the issue for Hampton Roads in very similar terms, emphasizing that “islanding” a base is ultimately ineffective. “Those are definitely issues there and it's not just the bases, it's where everyone lives. What you find out is you can make your base absolutely resilient. You can make it so that under any circumstance whether it's natural or man-made, that the base is good to go but if the people who work at the base, where their home is, is threatened, the base isn't effective. The base needs the people to operate. If the people can't come to work because their home is underwater, or threatened by fire or the road infrastructure system isn't working or the base has great backup power everywhere it needs it, but the rest of the region is black, doesn't work. It's a collective thing. Hampton Roads, it's not just the installations, it's where everyone lives. Everyone lives in low-lying areas that are all threatened by inundation. It's a big issue there.” In contrast, in San Diego, he sees the principal impacts as distant, 70 years out or more, so that they are worthy of hypothetical planning, but do not fit within the thirty year public works planning window for capital projects of major infrastructure changes.

Aside from this reference to Hampton Roads, the narrative surrounding interdependence was absent in San Diego. Rather, the common catchword was consistency, reflecting the goal of arriving at similar decision-making frameworks for all of the jurisdictions involved. This goal to use consistent data for planning purposes was not unique to urban/military collaborations, but arose in the context of several multilevel collaborations in the region which happened to include the military. The ICLEI Sea Level Rise Adaptation Strategy for San Diego Bay was the first major cross-jurisdictional plan in the region, developed in 2011-12, and arriving at consistency in planning was one of the key goals of the study. Emily Young, a director in the San Diego Foundation’s Environment Program when they funded the strategy, framed the work in those terms. “It was sea level rise adaptation and we used that [ICLEI Strategy] as an opportunity to really promote cross government collaboration around grappling with the impacts of climate change because it's not just the Navy, it's not just the City of Chula Vista or Imperial Beach or San Diego or Coronado, it's all the different entities around the bay, the Port, the military, the Airport, the five cities. They're all grappling with it, the county of San Diego, SANDAG, because they’re making infrastructure investments. We never looked at the military in isolation but really as part of the ecosystem of government that was going to
be facing the impacts of climate change and the joint planning and the shared data that they would need to use so that there would be consistent analysis across the board.”

Achieving consistency has remained a theme in regional collaboration. Laura Engeman, the director of the Climate Collaborative, underscores that consistency is a major focus for the sea level rise working group, so that when members of the group engage with decision-makers or the public, they have a clear message about the research and data they are planning around. While there hasn’t been agreement about a single sea level rise scenario, the Collaborative did produce a chart of constituent scenarios for them to refer to in conversations with decision-makers to demonstrate that each municipality and agency was operating in the same realm. “We created a chart of all the different sea level rise scenarios that they're each using for planning to give them as backup documentation to show that their entity is in the same -- is basically using the same horizons essentially to plan for. I've added the DOD Southwest installation ranges in there as well so they can see that they're fairly close, within a foot of each other for 2050 and 2100 lines. We want to try and provide that as consistent as possible to developers or others . . . they're asking for these risks assessments on the same horizon and not all doing something completely different and everyone's confused about what risks we're planning for.” While she highlights the desire for clarity, by mentioning developers, she implies the common concern that developers will move their business to cities within a region with less stringent sea level rise standards if there are significant differences. This is not just a matter of clarity for decision-making, but an attempt to head off intermunicipal competition.

Notably, Len Hering proposed the need for consistency as the most convincing reason for the Port and Navy to form a partnership as well. Regarding the Navy’s position, he suggested they run the risk that their planning will be ineffective, and their project budgets inconsistent, if they are planning for different conditions than the Port. “You own 25% of the port in San Diego harbor. Your capacity to be able to both plan from a resiliency perspective and to be consistent, I think that would be the biggest piece is, your planning factors and the city’s planning factors need to be consistent with one another . . . If your planning factors and our planning factors are different, those dollar amounts won't match.”

In further discussions, this focus on consistency remained. When Commissioner Castellanos and Admiral Lindsey, Commanding Officer of the Navy Region, decided to enter into an agreement, they emphasized that as the two largest land managers, aligning their initiatives on this important issue would “show strong leadership” (Gibbons Interview). Navy biologist Walt Wilson finds that their engagement so far has been more successful than expected; with the agreement in place, the stakeholders have been able to “pick a number and get to work.” He poses this as a stark contrast to other adaptation meetings he has attended around the country which reach an impasse in choosing a sea level rise scenario. Wilson explains that by “pick a number” he actually means “pick a model 36”;” the number itself is less important than an internally consistent framework. At

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36 In this case, the stakeholders chose the CoSMoS model because it is widely used in California
this point, “getting to work” has consisted of discussing monitoring options and indicators are also on the agenda (Diego, 2018a, p. 28). Any potential collaboration on hard or soft infrastructure remains a distant prospect (Gibbons Interview).

Even though achieving consistency formed a thread, it was less prevalent than the theme of recognizing interdependence in Hampton Roads. It is also a less powerful concept in the context of joint planning, generally reflecting a goal of working side-by-side in an informed manner rather than actually collaborating. This may reflect that in San Diego, the risk of sea level rise is perceived as more distant, and attempting to achieve agreement on decision-making frameworks is typically an early step in a planning process. However, adjacent planning may persist as the dominant planning mode rather than joint planning.

4.3.3 Obstacles

**Lack of Navy planning capacity**

Obstacles to collaboration arise within some of the joint planning settings as well as within the Navy itself. In the main forum for civil/military collaboration in the region, the SANDAG military working group, climate change has not been a priority. Mike Woiwode, who chaired the group for three years, has observed that the priorities are more immediate. “It always boils down to the military concern about encroachment and the city’s concern about traffic.” Climate change would only be addressed peripherally if they implement effective transportation planning that results in reduced greenhouse gas emissions. Though Navy representatives do attend this and other regional working groups, and make an effort to maintain a “good neighbor” relationship (see Sec. 4.3.1), the Navy has not allocated capacity to necessarily participate in local planning.

Jim Nakagawa, the planner for Imperial Beach recounted his efforts to engage Navy personnel at the region and installation level, including a community planning liaison officer, in the process of updating the Local Coastal Plan. “I asked him would he like to sit in on any of our committees. He said, "Well, I've got so many things to do." The Navy doesn't specifically budget his time or any of his staff for this kind of work. That was the end of that. Not a whole lot of enthusiasm coming from the Navy.” Other municipal and regional decision-makers had difficulty even inviting Navy representatives to meetings because it was difficult to determine the correct point of contact, and this complexity was always exacerbated by frequent personnel rotation. These same issues arose in Hampton Roads and were overcome to some extent through the Joint Land Use Study, which as an existing Navy planning mechanism, allows them to budget for Navy involvement and engages the appropriate personnel.

**Lack of Navy leadership on adaptation**

Not only do the current cooperative processes fail to address climate change, but as the

and publicly available unlike the Navy’s models. The USGS Coastal Storm Modeling System is a dynamic modeling system which takes into account the physics of sea level rise, storms, and coastal evolution (in contrast to a “bathtub model”).
sea level rise planning process for the Coastal Campus revealed, the Navy does not necessarily pursue adaptation of their own initiative (see Sec. 4.3.1). Chris Stathos, the Regional Environmental Coordinator for Navy Region Southwest maintains that all of the Navy’s climate change work is ad hoc, piecemeal and crisis driven. “. . . it may seem like we're really organized out here but it's only because when I see something is a crisis, I put a lot of focus on it and then when that fire dies down, I move on to the next crisis.” Illustrating the level of priority of adaptation planning, in the recent proposal for the region to fund installation specific sea level rise studies, the NAVFAC planner Garth Nagel requested a mere $50,000. Stathos ascribes this in part to a lack of explicit authorization for work in this area. As of August 2017, there had been no Department of the Navy instruction on adaptation, so there was no requirement to which time or expenses could be attached.

In practice, adaptation is not only a low priority in planning, but in facility upgrades. When NAVFAC does upgrade facilities, they do so in accordance with good engineering practice, for example making utility bunkers more watertight, or at the bare minimum, adding flood alarms to alert someone to pump them (Stathos Interview). However, another NAVFAC environmental staff member suggested that for the most part, renovation and maintenance budgets are insufficient, so they only “get ahead” in new construction. Given this focus on new construction, other flooding issues can fall by the wayside. Even though Serge Dedina, the mayor of Imperial Beach is a champion of the Navy’s environmental stewardship in many respects, he notes that they have not adequately addressed flooding from Ream Field\(^\text{37}\) which also impacts the city of Imperial Beach. “Where I don't see the Navy being really smart is on Ream Field and planning for flooding. They've been, actually, fairly lagging on that. They just have not used their power on that. I think, they've been really focused on that project [the Coastal Campus]. . . It's having a significant impact on the Navy on the Northern River Channel. The river actually moves south, and it's right at the edge of their base. That is something that they're not dealing with that we're trying to get them more engaged on that, and they're just not.”

Even when one Navy command has dedicated capacity to sea level rise assessment, other commands may not be aware of that because of the sheer size and decentralized structure of the organization. When Bart Chadwick, a scientist with Space and Naval Warfare Systems Command (SPAWAR),\(^\text{38}\) produced a report on assessing sea level rise for installations in the southwest (Chadwick, 2014)\(^\text{39}\), the City of Imperial Beach happened into the opportunity to use that data in their own sea level rise vulnerability assessment. However, personnel within other Navy commands do not seem aware of the results or

\(^{37}\) The local name for Naval Outlying Landing Field Imperial Beach, a helicopter facility.

\(^{38}\) SPAWAR is a naval command that designs and develops information and communication systems.

\(^{39}\) This research was supported by a grant from the Strategic Environmental Research and Development Program (SERDP), a joint program of the Department of Defense, Department of Energy and Environmental Protection Agency to support basic and applied research in environmental science and technology.
their implications. Dani Boudreau, the Climate Lead for the Tijuana River Estuary gave an invited presentation at Naval Facilities Engineering Command (NAVFAC) on sea level rise, and the audience was appreciative because they had not received any internal guidance, apparently unaware of Chadwick’s report. Other Navy personnel submitted this report to address Coastal Commission questions about the new Coastal Campus, but the report raised more questions than it answered (see Sec. 4.3.1).

Conducting research for that report, inconsistency in Navy vulnerability assessment and reporting made Chadwick’s work more difficult. When he was attempting to gather data for multiple installations, it was not readily available or in a standard format, because flood risk had not previously been on the agenda for those installations; he suggests that determining vulnerability across naval installations will remain a formidable task unless there is some standardization. “It's one of the big things that needs improvement to be able to address these kind of big base-wide or regional challenges, you need that data, you need people when they're doing other things, to be doing it in a way that's going to help . . . so, if they're doing repairs, if they're doing MILCON [military construction] . . . just to have that data put in the right place, in the right form and all that would really make the assessments much easier than having to recreate that.” Though unsurprising in such a large organization, this inconsistent guidance and awareness of sea level rise vulnerabilities detracts from potential navy leadership on the issue.

Army Corps Absence
In Hampton Roads, the U.S. Army Corps of Engineers serves as a key boundary organization, a point of connection between civilian and military flood projects, but in San Diego, they have largely been absent from the sea level rise discussion. Imperial Beach Mayor Serge Dedina criticizes this lack of engagement. “The agency that should be driving all this is the Army Corp of Engineers, and they’re just embarrassingly out of it. I don’t know what they do on a national level, but here it's nothing.” Similarly, Navy environmental personnel note their lack of involvement in regional climate planning. “We have a really hard time getting the Army Corps to the table on a lot of issues.” This may be changing with the Port/Navy MOA as an Army Corps representative, absent at other regional meetings, had attended the most recent Port Sea Level Rise meetings (Gibbons Interview).

Distance from DC
Comparing their situation to that of Hampton Roads, several decision-makers suggested that the simple fact of distance from DC rendered San Diego’s military-related sea level rise planning more tenuous. Chris Stathos, the Regional Environmental Coordinator for Navy region southwest presumes that Hampton Roads proximity to DC has translated into more resources. “Everyone recognizes, they’re in such more dire straits than any place else. Yes, and because they’re only 50 miles away from Washington DC, they are already getting a lot more attention. In their case, attention equals money. So they’re probably getting billets funded. They're probably getting projects funded. They're probably getting money to study this stuff and they're probably getting money to hire bodies who can go and sit at meetings like this all day long, every day of the week.” While federal funding is not in fact flowing to Hampton Roads, the perception of this
imbalance could hinder the pursuit of Navy collaborations on the West Coast.

4.3.4 Prospects
Given that the urban/military collaboration in the San Diego region is insubstantial in many cases, and nascent in the case of the Port and the Navy, it is difficult to evaluate outcomes. In spite of apparent comfort with a side-by-side approach to adaptation for now, many involved in the climate realm acknowledged the impending need for more joint planning. Some of the mechanisms for that, such as the Climate Collaborative sea level rise group, and the Port sea level rise working group already exist, but except for the SANDAG Shoreline Working Group which has already undertaken major beach nourishment projects with mixed results, implementation prospects remain vague.

In general terms, Nancy Bragado who was a planner with the City of San Diego for many years and now consults on adaptation, foresees that military collaboration would help advance adaptation. “Moving forward, focusing on the co-benefits that could come from military/city partnerships will be important. The Navy has a lot of investments in San Diego that they want to protect, which can also help protect local communities. Having the influence, credibility and resources of the Navy behind some of these adaptation efforts could help advance programs.” In this interpretation, the driving premise behind the Port/Navy agreement could be effectively applied to other areas. However, the Port/Navy planning process, which now includes the five municipalities, only addresses San Diego Bay; this leaves out a number of other municipal/military adjacencies in the San Diego region, including several on the ocean.

Oceanfront adaptation: limits to cooperation
The need for oceanfront joint adaptation planning is becoming clear in far more concrete terms than the need on the bayfront. In Hampton Roads, residents frequently feel the effects of sea level rise in inescapable street flooding from “rain bombs,” high tides, and storm surge. San Diegans experience some street flooding in low-lying neighborhoods, but sea level rise is most immediately affecting beaches. SANDAG, the regional planning agency, has already undertaken two major regional beach nourishment projects, one of which backfired. As beach erosion continues, more beach nourishment will be the most expedient response. In the case of Coronado, Bart Chadwick who has extensively studied local vulnerability, contends that the city and the installation are already committed to that approach to preserve their existing way of life. “They're sort of in that situation where they’ve either built up to the back of the dunes or they've actually built on to the beach. There are very few places where they can just allow for natural retreat. So, that's why they’re sort of locked in. In my view, they're locked in to putting sand on the beach pretty much. In the next hundred years or however long, that’s the only way that they're going to protect their assets in a way that allows them to keep doing business the way they want to which means doing amphibious training on the beaches and not just have a big rock pile where they can't do the things they need to do. Same with Coronado, you're not going to have tourists if there's just a big rock berm along the shoreline.”

With increasing erosion, Chadwick foresees that the rate of beach replenishment will have to accelerate and that cities and the Navy will have to coordinate to make that work.
“It's going to drive interaction . . . because it's not something you can address on a city by city basis. If one city is building revetments, and one is putting sand on the beach . . . it's not going to work, if it's done like that. That's one of the areas I think, looking down the road and then our work I think in Coronado really showed that really, one of the only adaptation strategies is to keep doing beach replenishment at an increasingly accelerated pace. For that to happen, all those cities and the navy are going to have to coordinate and find a way to make that work together, and it's a very non-trivial amount of investment.”

Coronado City Councilmember Bill Sandke’s observations regarding current beach preservation tactics in Coronado drive that point home. In the City of Coronado, the beach is starkly divided between public use and Navy use. A Navy guard in a watchtower warns anyone who gets too close to the invisible boundary at the edge of the Naval Amphibious Base (Fig.4.9). In an opinion piece for a local paper, Sandke noted the impacts to the city from the Navy’s unilateral action. “An example of the dangers of not taking a regional approach to this issue was clearly illustrated last year where the normal migration of sand from the Silver Strand to Coronado Beaches was interrupted by the US Navy bull-dozing a large sand berm to protect the NAB installations south of the Shores.” Laura Engeman, who directed the Climate Collaborative also suggests that sand replenishment would have to be coordinated. “I think everyone’s looking to them [the Navy] to see what they're going to be doing in terms of maintaining and sustaining their operations there because they have a huge amount of vulnerability on that base. . . . Then I think they will play a big part in the sediment management. If they're planning on using sand to shore up any of their structures, that's going to have to be very coordinated with the rest of the region.”

The SANDAG Shoreline Working Group intends to provide the means to achieve this coordination, but they have struggled with unpredicted consequences to their projects in the past. Dani Boudreau, the climate resilience lead for the Tijuana Estuary, suggests that in the long-term, beach nourishment tends to create more problems than it solves. “I think beach nourishment is actually really restrictive. I don’t think it’s a long term answer. In
addition to that, you’re not going to want the Navy to dump sand on their property, and have it end up on your back doorstep and vice versa. You’re not going to want to dump sand on your property, and have it end up on the Navy property. . . . the city of IB[Imperial Beach] had a beach nourishment project in 2012. It backfired big time. I think they’re kind of the case study of like, “We've got to come up with other options.” . . . preliminary results are showing, they put the wrong grain size sand down there. What happened was, it actually increased flooding in the properties. There was a big lawsuit, they settled outside of court.”

Boudreau explains the additional limitation that even if sand replenishment is coordinated and modeled correctly, sand is a finite resource. “There's a case study a few years ago . . . where you had a very, very rich neighborhood in Malibu, right on the coast. You have Steven Spielberg type residents. . . . They wanted to nourish their beach, they were told, can't afford it, can't do it. They said fine, we'll buy the sand ourselves. They all got together, we're just going to buy it, couldn't find sand for years that could actually be laid down on the beach. I think they eventually did. If you're talking in a situation like that where money is no object and they still can't find the resources.” Beach nourishment may appear expedient in the short term, but will likely be curtailed by unreliable modeling and basic resource limits. This will almost certainly create conflicts between cities and the Navy as their prospects for business as usual erode. It will also require unprecedented levels of cooperation exceeding the current paradigm of sharing data and monitoring.

4.4 Conclusion: the promise of consistency and limits to cooperation
Promotion of urban/military collaboration has had a much lower profile in San Diego than in Hampton Roads. However, one instance of substantive collaboration has arisen out of similar efforts. The Port and Navy developed a Memorandum of Agreement (MOA) to work on sea level rise as a result of the work of persistent champions who had inside knowledge of the Navy and their strategy of framing sea level rise as a legitimate, important issue with the imprimatur of the Navy.

Though the Port and Navy have a history of working together on natural resource management, development pressure in the region is such that military interests do not necessarily take precedence in land use disputes. Municipalities have been wary of ceding land use authority by developing further regulations to make civilian development compatible with military uses. Nevertheless, the San Diego bayfront municipalities have been eager to become involved in the Port-led sea level rise planning process, concerned about missing out on potential benefits of collaborating with the Navy.

In Hampton Roads, urban/military interdependence has been the catchphrase, encapsulating the insight that installations are unable to function without the surrounding community, but in San Diego, the notion of interdependence is absent. Instead, where civilian stakeholders are engaging with each other and the military, they have been seeking consistency so that key entities in the region are addressing sea level rise within similar frameworks. Consistency is a less powerful concept than interdependence, suggesting side-by-side planning rather than joint planning. Even under this less powerful
premise, the MOA invokes mechanisms of data-sharing and monitoring which are analogous to those unfolding in Hampton Roads. Though implementation remains distant, the San Diego agreement may prove to be influential given the amount of land and number of jurisdictions involved.

However, regional efforts to achieve oceanfront adaptation suggest limits to cooperation. One major coordinated beach nourishment project as well as the Navy’s ad hoc beach nourishment have had negative consequences for both the intended beneficiaries and their neighbors. More importantly, it is probably not a viable strategy in the long run, meaning that municipalities and the Navy will likely have to grapple with more challenging forms of adaptation, such as retreat. And options for retreat may potentially be made worse by intervening maladaptation.

The Port and Navy clearly have a shared interest in planning with an existential stake in a “working waterfront.” Neither of their operations are viable without direct waterfront access. These two actors for which sea level rise is the most pressing climate impact have galvanized regional collaboration around that issue. This risks leaving aside other climate impacts such as drought and heat stress which may be more urgent for more of the population. As in Hampton Roads, Navy involvement has a tendency to protect economic interests and high value assets over everyday life. However, in both places, the Navy is only involved in collaborative planning in response to the efforts of local champions. This means that with adequate intention and oversight, the opportunity remains to direct Navy involvement toward community benefits.
CH. 5 THE CLIMATE SECURITY PROJECT: EXPANDING URBAN/MILITARY ADAPTATION

“...climate change, it's not a military mission. Can you send a battalion out to attack it and kill it? Can you solve climate change with a gun? Or a combat aircraft? Or a destroyer? You cannot. So it's not at its heart a military mission. So the question is how does it affect the military mission.”

~Sharon Burke, National Security Strategist, New America

Over a decade ago, defense and climate experts made a deliberate effort to position climate change as a national security issue, and on that basis, develop a climate security agenda. For proponents, the first task was to convince retired and active leaders in the U.S. military of the relevance of climate change to the military mission. As the notion that climate change was a national security threat took root, the Pentagon began to develop adaptation policy in response to executive and legislative mandates as well as internal efforts. Building on this, climate security proponents embraced the next task of leveraging military acceptance of climate change to spur awareness among a wide range of policy-makers and the public, bypassing established environmental avenues. In many ways, military leadership regarding climate change was more apparent than real. However, the DoD’s incremental movement was sufficient for climate security proponents to create the perception that a stalwart, apolitical institution was taking climate change seriously.

The climate security agenda suggests that climate change has broad implications for the military: increasing conflict, a changing Arctic, and a growing humanitarian assistance burden. It also has clear implications for physical infrastructure; the full range of climate impacts, from sea level rise to drought, threaten bases. Though the built environment shared by installations and communities is not their first priority, climate security advocates have explicitly pursued an agenda of urban/military collaboration to address their joint vulnerability. Case studies of Hampton Roads, Virginia and San Diego, California, illuminate how this agenda translates into urban adaptation. These are not isolated cases, but part of a larger climate security project, providing justification for further action and a model of how adaptation might be accomplished elsewhere. An expanding cohort of proponents are positioning the climate security project to achieve further urban/military adaptation through persistent advocacy, the expanded application of existing policy tools, and the active development of new ones.

Decision-makers have been receptive to the climate security message in general due to its bipartisan appeal, and urban/military collaboration in particular due to the premise of interdependence. As a result, the multilevel project circulates between diverse localities with a large military presence and the national defense establishment, accruing methods and momentum on its path. Hampton Roads and San Diego are clearly outliers in terms of the intensity of their military presence. However, in light of the broader climate security project, the adaptation experiences unfolding there have growing implications for urban adaptation in the U.S. and the world.
As the power of the dual rationales of bipartisan appeal and urban/military interdependence extend the reach and influence of the climate security project to more urban adaptation projects, it is important to identify the emerging implications. In this case, the fact that military leadership is more apparent than real may actually present an opportunity. The Hampton Roads and San Diego cases demonstrate that urban/military collaborations occur as a result of local leadership. Between tangible vulnerability and some baseline policy, installations are in a position to engage with the surrounding community for adaptation, but are unlikely to pursue this; it is not typically a priority for leadership at the installation level or higher up. However, the likelihood that installations will be open when approached offers an opportunity for urban decision-makers to enroll local installations as partners in adaptation planning. With an expanding array of policy tools making defense resources available to the surrounding community, this could become an opportunity for not only joint planning, but joint implementation. While in some ways, the climate security project can be seen as overblown rhetoric, it is actually productive at multiple levels, supporting national policy tools and local planning and implementation.

5.1. The climate security agenda

5.1.1. Developing the climate security agenda

Unlike many political narratives, the climate security agenda has a very clear author and starting point. Advocates in the climate security space point to Sherri Goodman, former Deputy Under Secretary of Defense for Environmental Security, as the founder of climate security. She was at the Pentagon during the Clinton Administration when Vice President Al Gore mandated that environmental considerations be factored into national security activities, however, pairing climate change and national security was not an incidental outgrowth of this. Rather, in her telling, it was the result of a deliberate initiative on the part of several philanthropic foundations dismayed at the lack of climate action in the U.S., due to partisan rancor and an overwhelming focus on counterterrorism after September 11th. Goodman recounts, “after 9/11 the focus in the US was single-handedly on the terrorist threat both nationwide but also in defense . . . but at the same time you continue to have IPCC and other reports being done that continue to show scientific research about the continuing advances of climate. Then a frustration, I think by people who were either climate scientists or climate advocates that this was a partisan issue in the US, whereas it hasn't really been in Europe and most other places. . . .”

The foundations, which included Rockefeller and Hewlett, had identified that reframing climate change in terms of national security could be an opportunity to attract attention to the issue. “A group of foundations approached me and asked me if I would look at the national security implications of climate change. They were looking at ways of reframing climate change. I was particularly interested because of the work I've been doing since the early '90s on environmental security in the military. . . . This was an opportunity to look specifically at climate change as a national security consideration.”

At the time the foundations approached her, Goodman was a Vice President at CNA, a leading defense research organization which has provided high level, often embedded,
analysis to the Department of the Navy since the middle of World War II. In that
capacity, she convened eleven retired three and four star admirals and generals to serve as
a “Military Advisory Board” in her venture to explore the connections between climate
change and national security. Though some of these senior officers were initially
skeptical, they were willing to join in light of their longstanding professional relationship
with Goodman and CNA’s reputation. In the resulting report, *National Security and the
Threat of Climate Change*, she produced recommendations based on analysis of the
board’s meetings with leading climate scientists in the U.S. and U.K., in-house analysis at
CNA, and the military leaders’ experience serving as commanders in every region of the
world (CNA Military Advisory Board, 2007).

Goodman emphasized that CNA’s history and reputation were crucial to bringing
credibility to the issue of climate change for defense professionals. “It's not like bringing
in a group of just any academics or environmental advocates, these are people [CNA]
who spend their lives working for the military and the intelligence in the other parts of
government. That was the team I was working with when we did the research.” At the
time, the main task for the climate security project was to convince the military of the
seriousness of the issue. Assembling this board was the first step toward developing a
new level of credibility for climate change as not “merely” an environmental issue, but an
issue with sweeping domestic and geopolitical consequences.

In one of the key findings, the team argued that “climate change acts as a threat multiplier
for instability in some of the most volatile regions of the world.” On this basis, they
recommended comprehensive U.S. climate policy. While the report urged incorporating
climate change into the National Security Strategy, the National Defense Strategy, and
the Quadrennial Defense Review, the recommendations were not narrowly confined to
the Department of Defense; instead they encompassed all facets of climate policy from
reducing global emissions to helping less developed countries build capacity for
adaptation. As the founder and first executive director of the Military Advisory Board,
Goodman has since been widely credited with giving shape to climate security (Bolstad,
2016; Stockton, 2017).

Cheryl Rosenblum, now the Executive Director of the Military Advisory Board, insisted
that Goodman’s work was a turning point. “Some work had been done in the intelligence
community, and some in academia, but the research had not received significant public
attention. Goodman, and the members of the Military Advisory Board, put it together in a
way that it hit the public sphere. She really was the mother of this whole climate security
field.” Goodman propagated the import of climate change as a national security issue,
consistently deploying the catchphrase “threat multiplier” in policy reports and opinion
pieces. As she told a reporter at BuzzFeed News, “I just put out there one day, ‘How
about we talk about it this way,’ and it stuck.” Reporter Dan Vergano assessed its
resonance. “The phrase had a familiar appeal to military men, playing off the Pentagon’s
favorite “force multiplier” cliché from the 1990s, which was applied to everything from
laser-guided bombs to global positioning satellites (Vergano, 2015).”
5.1.2. Climate security uptake and meaning

Both the catchphrase and its implications were widely adopted. It appeared in the 2014 Quadrennial Defense Review\(^{40}\), the 2014 DoD Climate Change Adaptation Roadmap, and a 2015 White House report on “The National Security Implications of a Changing Climate (The White House, 2015; U.S. Department of Defense, 2014a, 2014b).” As expected, any mention of climate change has been removed from these types of documents issued by the Trump Administration, yet the term had already reached wide circulation among defense personnel and has had staying power. In San Diego, Navy biologist Walt Wilson defaulted to the term in explaining why the DoD is concerned with climate change, noting “of course, the bigger picture for the Department of Defense on climate change and everything is that it’s a multiplier because droughts in other countries and everything cause agriculture and food supplies to go down and it all leads to unrest.” As discussed below (see Sec. 5.1.4), even in the face of the hostile Trump Administration, climate change is still taken into consideration in the Department of Defense.

The “threat multiplier” phrase specifically conveys the argument that climate change will exacerbate conflict, particularly in areas of the world already grappling with instability. However, taken more broadly, the term also implies the argument that security experts repeatedly insist on, that climate change is not a military mission, nor a direct threat, but an indirect threat that exacerbates others. As Sharon Burke, a national security strategist who served as Assistant Secretary of Defense for Operational Energy Plans and Programs articulates it, “climate change, it’s not a military mission. Can you send a battalion out to attack it and kill it? Can you solve climate change with a gun? Or a combat aircraft? Or a destroyer? You cannot. So it's not at its heart a military mission. So the question is though how does it affect the military mission.”

Even though it is an indirect threat, John Conger, the Director of the Center for Climate and Security and former Principal Deputy Under Secretary of Defense (Comptroller) argues unequivocally that the defense establishment would be remiss in ignoring it. “It is important for DOD . . . to highlight the fact that climate change has national security implications. It does. They are wide and varied. They could be creating problems that weaken institutions. Whether the institutions are already weakened, it creates instability in other parts of the world. It's a second or third order effect maybe, or maybe it's a first order effect. It's hard to say. The fact of the matter is that when you take this variable into account, it informs your planning. Why wouldn't you want to be informed? If you are willfully ignoring something, you don't get to prepare for the risk, and I think that is a dangerous path.”

Burke delineates the four areas that climate security encompasses: increasing conflict, increasing the humanitarian assistance and disaster response burden, a changing Arctic, and impacts to readiness, including the ability to train and to maintain the physical plant.

\(^{40}\) Beginning in 1997, the Quadrennial Defense Review outlines national defense strategy every four years.
The physical plant, which encompasses bases, training ranges, and the infrastructure that serves them, is of the most relevance to urban/military collaboration. In a changing climate, impacts to installations and infrastructure have become common and widespread. Joan VanDervort, a defense consultant and former Deputy Director, Ranges, Seas and Airspace recalled a full gamut of impacts; thawing permafrost in Alaska, hurricanes and extreme precipitation in the southeast, and drought in California all affected training during her tenure. She found the speed and extent of impacts to installations and ranges surprising. “Really how quickly it's all happening and then connecting the dots on the sea level rise and the drought and the wildfires. And the decline in the permafrost and once you start really pulling it together and I started looking at what's happening right now and the damage that was caused just in the last couple of years at army installations and training grounds that we had never before seen, not in the twenty years I've been through working with the army, I've never seen anything like this.” Impacts to the military’s physical infrastructure have become palpable and inescapable.

5.1.3. Buttressing the climate security agenda
Defense experts justify military attention to climate change most prominently with the “threat multiplier” narrative, using the concept of exacerbating instability to argue how and why climate poses a risk. However, some buttress this with another narrative, suggesting that the military culture of planning for contingencies makes planning for climate change a logical extension. This interpretation contains two key points, that it is standard, long-standing military practice to plan for the long term and to plan in spite of uncertainty. Mark Nevitt, former Commander of the Navy Judge Advocate General Corps and expert in environmental law, argues that planning for the unknown has been integral to military culture for centuries. “The military, the Department of Defense, has a rich culture of planning. That's what we do. We plan for the unknown. Climate change is the ultimate scientific problem with unknown consequences. I think, the military, as a general matter, is uniquely situated to prepare for climate change because we tap into the 200-year history of planning for the unknown that was deeply embedded into the culture. . . . You know the term adaptation in the climate sense. The military plans for military adaptation in an armed conflict in whatever that form may be. That's why I think climate change is uniquely situated for that.”

Retired Brigadier General Gerald Galloway, a recognized leader in civil and environmental engineering, also makes a historical argument that environmental conditions have long been a central consideration in military strategy. “There is a 1982 Army field manual, 100-5. It says and I quote accurately, ”Weather and terrain are the most significant elements on a battlefield,” and I'm fundamentally a geographer at heart. . . Three colleagues and I wrote a book . . . Battling the Elements, it's a story of 26 battles in history where weather and terrain made the difference. If you recognize that, then you know, and almost any good senior commander that I know has recognized that. . . you were really worried about that big storm, but when you're attacked, what if it's going to happen five times more often?” This explanation may be overly simplistic in its environmental determinism, ascribing a deciding role to environmental factors rather than power or resources, but it illuminates how climate change could appear consequential in conventional military strategy.
Making a similar argument, Conger deploys the military practice of planning for the unknown to obliquely address the common counterargument that there is too much uncertainty to respond. “DOD is an organization that is built to prepare for contingencies. We don't think there's going to be a nuclear war but we prepare for it. You don't think there's going to be a land war in Europe, but we're going to prepare for it. Or in Korea or wherever. It could happen, so you prepare for it. What are the climate effects? We’re not sure but we’re going to prepare for it.” This argument still encounters resistance due to the long time horizon of projected climate impacts. But Cheryl Rosenblum points out that, absent planning, threats viewed as far off have a way of becoming short-term problems. In the foundational CNA report, she observes, General Gordon R. Sullivan, former Chairman of the Military Advisory Board and Former Chief of Staff of the Army, put it this way. “But speaking as a soldier, we never have 100 percent certainty. If you wait until you have 100 percent certainty, something bad is going to happen on the battlefield.”

5.1.4. Accommodating climate security under the Trump Administration
Under the Trump Administration, in which the Commander-in-Chief glibly attacks climate change as a hoax (Schulman, 2018), some accommodation to the shift in politics has been necessary. Nevertheless, at the level of the Pentagon and installations, the DoD continues to incorporate climate change into planning. DoD policy has been durable partially because James Mattis acknowledged the reality of climate change before his senate confirmation as the first Secretary of Defense in the Trump Administration (Copp, 2017; Mintz, 2017). However, climate change has been so deeply integrated at multiple levels of the DoD that simple bureaucratic inertia makes it difficult to quickly reverse course. Speaking at the Virginia Coastal Policy Center conference “Defending Our Coasts,” Deputy Assistant Secretary for Environment Maureen Sullivan directly addressed the issue of inserting climate change into defense policy under the Trump Administration. She noted that one of the tactics was simply changing language from “climate change” to “changing climate.” More substantively, as adaptation planning was explicitly in her portfolio, she had worked with her team to fit resilience into Mattis’s priorities which were readiness, alliances, and business reform. In her analysis, resilience clearly fit into all three of them; for example “smarter business decisions” would suggest examining decisions for their long term sustainability. She emphasized that with its “long track record of recognizing risks and addressing them,” the DoD would continue to address climate risk.

Somewhat counterintuitively, DoD climate policy has also been durable because climate change was never part of the mission, but an attenuated threat to the mission. Therefore, much of it was simply integrated into other policy and does not require any sort of strategic double talk as a cover. Retired Rear Admiral Ann Phillips, one of the major champions for adaptation in Norfolk, and a board member of the Center for Climate and Security, explains that when the Trump Administration attempted to remove climate change from the DoD budget, there was nothing to remove. “I think one thing Dean [Captain VanderLey, Commanding Officer of NAVFAC Mid-Atlantic] will say . . . is, they don't do something because it's a climate change impact; they do it because it's a
mission impact. They need to plan, they need to prepare. If that includes preparation for flooding, then they'll prepare for flooding. If that means they need a more resilient electric grid, then they will build a more resilient electric grid. But they'll never say this is because of climate change. So when the Trump administration apparently came to them, went through all the budget lines and tried to look for stuff that said climate change, nothing did because they don't think of it that way.” Retired Brigadier General Gerald Galloway notes the persistent risk of “command climate” or the tendency to fall in line with implied direction from the top, but there have not been explicit orders to avoid discussion of climate change. Phillips remarked that, “I still talk to Captain VanderLey on the base and say, ‘What are you doing? Are you able to talk?’ He says, ‘Sure, no one's told me to stop doing anything.’” In spite of political headwinds, the DoD bureaucracy continues its limited climate work as an aspect of standard business operations.

5.2. The development and influence of military adaptation
Climate security gained prominence after Sherri Goodman worked with CNA to frame climate change as a national security threat and document the policy implications. An earlier report, commissioned in 2003, was the first publicly visible turning point linking the Pentagon to climate change. At the behest of DoD futurist Andrew Marshall, two analysts in the Pentagon prepared the report An Abrupt Climate Change Scenario and Its Implications for United States National Security, but at that point, it was still considered a long-term, unlikely threat (Schwartz & Randall, 2003). It was only after the CNA report and subsequent advocacy efforts that climate change began to be incorporated into defense strategies, policy and codes, and legislation. At the same time, some institutional and research capacity were directed toward climate. As climate change has been incorporated into defense policy, it has touched on all four issue areas, conflict, the Arctic, disaster response and physical infrastructure. The latter is the focus here as it is the area most central to the urban built environment.

5.2.1. Adaptation strategies: influence of the executive vision
Reflecting political priorities, documents such as the Quadrennial Defense Review (QDR) and the National Defense Strategy have only included climate change when the administration in power considers it a priority. Accordingly, both QDRs produced during the Obama Administration addressed climate change and the National Defense Strategy under the Trump Administration omits it. Climate change was first included in the 2008 National Defense Strategy under the George W. Bush Administration, where it received a passing mention as a factor that could interact with other geopolitical changes to “generate new security challenges;” in other words, it was positioned as a “threat multiplier” without use of the phrase. Whether these strategies include climate change or not, as political documents, they provide guidance, but are in no sense binding. Sharon Burke explains that when climate appeared in the Obama era QDRs, environmental advocates mistakenly expected results. In that era, the relative lack of follow through may have been disappointing to climate advocates, but it means conversely that even when

41 The National Defense Strategy is prepared every ten years and replaces the Quadrennial Defense Review prepared every four.
climate change does not appear in those documents, the DoD may continue to address it. “I think a lot of advocacy groups got very excited because the Quadrennial Defense Review said climate change. The Quadrennial Defense Review is a political document. It is not a military document. That's okay, that's the Commander-in-Chief's job to set priorities for the military, but that reflects the President's judgment and his political appointees. That's what they’re supposed to do, but I find a lot of the advocacy groups think that means, oh the U.S. military is all in on this... the next one [QDR] that comes out, it's not going to have climate change in it, at least not in a positive way... It just means it's not a priority for the Commander-in-Chief. He's not going to direct them to work on it. They may still work on it. It's politically controversial. It's an apolitical military. They're going to avoid talking about it in public. But that doesn't mean they don't work on it if they need to. For example, Iran is politically controversial, right? Do you think the military is not planning on Iran?... they do what they have to do.”

Accordingly, climate policy in the DoD persists in spite of changes in administration. In 2013, President Obama issued an Executive Order “Preparing the United States for the Impacts of Climate Change” requiring ongoing adaptation planning in all federal agencies. In response, the DoD prepared the 2014 Climate Change Adaptation Roadmap and in 2016, the DoD issued a directive on Climate Change Adaptation and Resilience to address evolving federal requirements. The directive assigned detailed adaptation responsibilities to many of the component heads within the Office of the Secretary of Defense. The Assistant Secretary of Defense for Energy, Installations and Environment was charged with serving as the DoD’s “primary climate change adaptation official.” Among the responsibilities assigned to that office, several provisions directly bear on physical infrastructure and land use planning: one requires that adaptation be considered in installation planning including impacts on built and natural infrastructure, another requires that engagement with state and local governments through the Joint Land Use Study program consider adaptation, and a third requires guidance on engineering standards to enable adaptation. Several other provisions indirectly influence work in the built environment, including leveraging DoD research to develop and implement adaptation planning tools, and collaborating with other federal agencies to demonstrate technologies, standards, and tools that enable adaptation.

In an executive order in March 2017, President Trump revoked a number of Obama’s actions related to climate change including the 2013 executive order. In conjunction with installing skeptics as agency heads, this move has hampered climate efforts across federal

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42 EO 13653. This built on a previous executive order, EO 13514 Federal Leadership in Environmental, Energy, and Economic Performance, which had required that agencies develop initial adaptation plans.
43 DoD Directive 4715.21
44 “Engineering standards” includes the Unified Facilities Criteria Program which serves as the DoD planning and building code.
45 The Directive identifies the Strategic Environmental Research and Development Program (SERDP) a joint program of the DoD, DoE and EPA as the source of this research.
46 Executive Order 13783, Promoting Energy Independence and Promoting Economic Growth
agencies. However, the DoD Directive remains in effect\textsuperscript{47} and all of its adaptation provisions persist. Under an administration openly hostile to climate science, it remains policy, as per the directive, that “The DoD must be able to adapt current and future operations to address the impacts of climate change in order to maintain an effective and efficient U.S. military.” Provisions to address climate change not only appear in legacy directives that may have escaped the notice of a notoriously incompetent administration. Climate policy appears in a directive issued under the Trump administration as well: a March 2018 Directive concerning Homeland Security\textsuperscript{48} requires, among many other provisions, that climate change be integrated into DoD policy for homeland defense.

5.2.2. Adaptation policies: mainstreaming in the DoD

Those charged with implementing adaptation in the Office of the Secretary of Defense have focused on mainstreaming, or integrating adaptation into existing codes and policies. Due to a lack of dedicated resources, the only prospect for achieving adaptation was to make it a consideration for new planning and construction. John Conger, former Principal Deputy Under Secretary of Defense (Comptroller) describes how experience informed his mainstreaming strategy. “of all those things, time is the most fungible. If a little bit of time can make sure that you spend your resources more wisely, not new resources, the resources you already have. How do you spend that military construction? I went to more than my share of White House meetings on climate change and they would talk about how they wanted these billion dollar grant programs. I listened to this and they're not getting that money from Congress, they are a Republican congress . . . Our contribution to this effort is how we spend it. We're forcing people to consider climate change as they plan for how they spend the money we're going to give them rather than giving them new money.”

Burke explained further that these efforts were “revenue neutral” because “you didn’t have to appropriate funds to change what is in the Unified Facilities Criteria\textsuperscript{49}.” The required staff time would be an “implicit cost,” it is not standard practice to document how staff time is spent. As a result, the Unified Facilities Criteria document on High Performance and Sustainable Building Requirements incorporates climate risk and applies to “all planning, design and construction, renovation, repair, operations and maintenance” across the DoD. It stipulates that design for new buildings take into account “Government-provided” climate change projections and that climate resiliency of existing buildings be improved through operations and maintenance policies.

In another notable example of mainstreaming, the Naval Facilities Engineering Command (NAVFAC) produced a Climate Change Installation Adaptation and Resilience Planning Handbook to serve as a reference for integrating adaptation into Installation Development Plans.\textsuperscript{50} The handbook provides detailed guidance to identify climate impacts, potential responses, and cost/benefit analyses in line with building

\textsuperscript{47} The Directive was revised in August 2018 to reflect an organizational change within the DoD.
\textsuperscript{48} DoD Directive 5111.13
\textsuperscript{49} The Unified Facilities Criteria is the DoD planning and building code.
\textsuperscript{50} The preferred term for master plans in the Navy.
industry best practices (Fig.5.1). Reflecting a “protect, accommodate, retreat” paradigm, all options are on the table. In their example of a hypothetical installation confronting sea level rise, they assess alternatives ranging from structural and natural infrastructure to relocation (Leidos & Berger, 2017, pp. II–4).

![Diagram of sea level rise and inundation](image)

**Fig.5.1** The *Climate Change Installation Adaptation and Resilience Planning Handbook* prepared by NAVFAC addresses sea level rise in line with building industry best practices. This diagram of a hypothetical installation portrays a “plausible future condition” for planning purposes (Leidos & Berger, 2017, pp. I–17).

### 5.2.3. Defense legislation: Congress leads on adaptation

In recent legislation, Congress has required that the DoD address adaptation more proactively. The 2016 Military Construction Appropriations bill directed the DoD to assess flood and coastal erosion risks to new construction, and report to Congress within a fairly short timeframe. The resulting *Climate-Related Risk to DoD Infrastructure* report, issued in early 2018, summarizes survey results of climate vulnerability for primary installations worldwide, over 3,500 sites. The survey asked respondents not only about DoD assets, but “observed effects on similar assets in the surrounding community that provided supporting services (Office of the Undersecretary of Defense, 2018, p. 1).” In the survey, this included how utilities, transportation and emergency services would be affected by the range of climate impacts under consideration: flooding from storm surge, flooding from non-storm surge, extreme temperatures, wind, drought and wildfire (Fig.5.2). In other words, their methods incorporated infrastructural interdependence between installations and surrounding communities as a basic operating assumption.
In response to a DoD survey, these sites indicated multiple forms of vulnerability. Other sites experienced individual effects such as flooding, extreme temperatures, and drought. Source: (Office of the Undersecretary of Defense, 2018, p. 6)

The report appeared forthcoming about climate risk, noting that over half of sites experienced effects of a changing climate. However, reporters at *The Washington Post* found that the Pentagon had made some substantive changes to an initial draft prepared during the Obama Administration. Not only did the authors shift language from “climate change” to “changing climate” as Trump era politics appeared to dictate, but they omitted references to sea level rise which had been one of the core components of the initial report (Mooney & Ryan, 2018). In response, twenty-one Democratic senators wrote a letter to Secretary Mattis noting that the DoD had typically been “clear-eyed” in its reliance on science, but expressing concern that “If DoD is not publishing data that it collects from our installations because they do not fit a particular political narrative, the department is failing to let the science inform its understanding of how changes in the environment may pose a risk (Schatz, Reed, Durbin, Smith, & et al, 2018).” In spite of the apparent durability of DoD climate policy, there has been some retrenchment under the Trump Administration.

The DoD infrastructure report only provided an initial indication of vulnerability. In the Fiscal Year 2018 National Defense Authorization Act (NDAA)\textsuperscript{51} Congress required an additional report, noting that “military installations must be able to effectively prepare to mitigate climate damage in their master planning and infrastructure planning and design.” The ensuing report summarizes vulnerability to 79 high priority installations. After detailing the departmental response through updates to planning and codes, the report

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\textsuperscript{51} FY 2018 NDAA Section 335
concludes that climate measures occur through mainstreaming. “From a resources perspective, DoD is incorporating climate resilience as a cross-cutting consideration for our planning and decision-making processes, and not as a separate program or specific set of actions.” While this approach offers the potential advantage that climate is considered in every decision, it also emphasizes the lack of dedicated resources. Several Democratic Congresspeople were dissatisfied with this report as well, and reiterated the need for the DoD to fulfill the explicit requirements that Congress had laid out including a list of the ten most vulnerable installations in each service and specific adaptation measures along with cost estimates (Mitchell, 2019).

Congress went beyond requiring reports in the FY 2019 NDAA, mandating that the DoD enact three key policies: 1. Disclosing flood risk and adopting flood mitigation measures for military construction, 2. Amending Unified Facilities Criteria to require that changing environmental conditions be incorporated into design for military construction and, 3. Including resilience in master plans for major installations. In line with current best practice, the specified flood mitigation entails that if a building is located within a 100 year floodplain, mission critical facilities be raised three feet above base flood elevation. The second requirement is made fairly robust to the vagaries of climate politics by requiring that these changes persist in any successor regulations and that determinations be based on data from “reliable and authorized sources” including the National Academies of Sciences, the U.S. Geological Survey, and the U.S. Global Change Research Office and National Climate Assessment. In addition, the act defines “military installation resilience” to include “transportation, logistical, or other necessary resources outside of the military installation” that are essential to installation function, once again incorporating interdependence as an operating assumption. These recent moves toward integrating climate change into DoD policy illustrate that while some change has come from within, much of it has been compelled by Congress.

5.2.4. Institutional and research capacity: collateral resources
While ostensibly avoiding any direct commitment of resources, the DoD does channel some institutional capacity toward climate change. The largest contribution comes from the Strategic Environmental Research and Development Program, a joint program of the DoD, DoE, and EPA. In the past, the program has funded research examining climate change impacts and decision-making (Burks-Copes et al., 2014; Chadwick et al., 2015; Storlazzi, 2017). The January 2019 DoD report to Congress lists SERDP as a pathway to increasing installation resiliency, noting three areas in which the program is pursuing climate research: scenario modeling, decision support, and resilient materials. As of early 2019, the SERDP website featured “Infrastructure Resiliency” as a program area with straightforward language acknowledging the gravity and extent of adaptation to climate change. Similarly, the Navy features a webpage on “Energy, Environment and Climate Change” which features the “Task Force Climate Change” that reports to Navy leadership on impacts to maritime security (SERDP, n.d.; U.S. Navy, n.d.). While the existence of these websites may seem inconsequential, they reflect publicly available

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52 FY 2019 NDAA Section 2805
53 As determined by FEMA
acknowledgement that the DoD considers climate change a real threat in line with mainstream climate science, in contrast to the obfuscation and neglect that characterize the EPA’s climate offerings under the Trump Administration. This public presence matters, but more importantly, the Navy Task Force does represent the commitment of personnel and resources to addressing climate change. The budget for this Task Force is certainly miniscule in the context of a defense budget exceeding $700 billion; however it does require resources to assess climate science, plan for climate change impacts to Navy operations, and plan for a changing Arctic. In addition, the findings of the Task Force will inform future investment decisions which will likely be responsive to climate change even if they are not predicated on it (Freeman, 2010).

5.2.5. Deferred adaptation: military infrastructure

Clearly the military does address climate change, but it remains a low priority. While some initiatives have arisen internally, more often, DoD climate policy has been driven by executive or legislative action. In that sense, the Obama Administration and Congress both served a greater leadership role in incorporating climate change as a threat to national security. By definition, for a warfighting institution, climate change is not the mission. The Department will always be focused on numerous threats perceived as more urgent. For context, the DoD Directive on adaptation was one of seventeen released in 2016; others addressed issues ranging from biometrics and explosives management to nuclear weapon life-cycle activities. Consistent with the “threat multiplier” framing, the DoD treats climate change as an indirect threat, reducing the imperative for action. In addition, while the mainstreaming approach to incorporating climate change into DoD policy suggests that it is considered broadly relevant, it also demonstrates an unwillingness to dedicate resources other than limited overhead and research grants.

In answering their own question, “Why do we care?” in the 2018 infrastructure vulnerability report, the DoD states that climate change affects the operating environment, required missions, and base readiness. They contend that “If extreme weather makes our critical facilities unusable or necessitate [sic] costly or manpower-intensive work-arounds, that is an unacceptable impact.” However, by many accounts bases are a low priority. Sharon Burke explains that bases are seen as overhead rather than the central defense “product.” “. . . as far as what’s a priority for the military and for the Department of Defense, bases are a low priority. They are seen as overhead. So that’s not going to drive the way they think about the world, or their investment, or what they prepare for. . . . They do care about the bases but . . . . if you go to them and you say, “You have to cut $30 million,” this is going to be the first place they look because otherwise, they have to cut warfighting capabilities. . . . Like any business, their priority is the product, the output, and the people. The overhead is just not a priority, it’s a thing that allows you to do those things.” Consistent with the low priority accorded to bases, the DoD has a serious deferred maintenance issue, similar to that facing civilian infrastructure across the United States.

James Balocki, Deputy Assistant Secretary of the Navy for Installations and Facilities has been trying to introduce the term “foregone maintenance” in place of “deferred maintenance” because it is a more honest characterization of the maintenance backlog.
that will never be addressed. Capital costs and operations and maintenance funds are accounted for in separate budgets, so even though the DoD position as builder and long-term owner would seem conducive to considering lifecycle costs, that is not generally the case (Balocki Interview).

Speaking to the Association of Defense Communities, Lucian Niemeyer, the Assistant Secretary of Defense for Energy, Installations and Environment remarked that even with the increase in military construction spending as part of the enlarged 2018 defense budget, that would generally be directed to new facilities rather than recapitalization of existing ones. This state of affairs informed Conger’s approach to mainstreaming (Sec. 2.2). While it was highly unlikely that buildings or infrastructure would be retrofitted with adaptation measures, the opportunity remained for new construction to incorporate adaptation. However, making a similar point to Burke, Katherine Hammack, the former Assistant Secretary of the Army, emphasizes that even new construction is a relatively low priority because it has to compete with mission requirements. The military has only been funding new construction at the “point of failure.” In one example, in Alaska, where bases were built on permafrost that is now thawing, the military has been monitoring the situation to determine at what point conditions become critical rather than proactively rebuilding (Hammack interview). However, plans to build a wall around the Washington Navy Yard that came to light through a Freedom of Information Act request, suggest that there may be more adaptation plans than have been made public (Flavelle, 2019).

Working against adaptation, the low level of urgency accorded to climate change is compounded by the low priority of physical infrastructure within the defense budget. In most cases, military policy amounts to pragmatic deployment of basic adaptation practices. This has repercussions for the built environment directly under military authority and, by extension, the surrounding community involved in any potential urban/military collaborations. Crucially, the military will not in fact serve as a climate leader.

5.2.6. Inflating military climate leadership
Nevertheless, the notion of military leadership on climate change has become a popular story in the media, especially under the Trump Administration when headlines tout the contrast between the president and the Pentagon (Bergengruen, 2017; Eilperin, Dennis, & Ryan, 2019; The Economist, 2018; Udvardy, 2017). In a Harvard Business Review article, two Harvard Business School professors note that the Navy “cannot afford the luxury of ideology.” In “managing climate change,” they offer lessons for business, giving the example that the Navy has built new double-decker piers at Naval Station Norfolk to address sea level rise (Reinhardt & Toffel, 2017). However, Retired Rear Admiral Ann Phillips who was intermittently based in Norfolk, insists that attributing reconstruction to sea level rise is misguided. “Anytime someone tells you they built those piers because of sea level rise, you know they don't know what the heck they're talking about. They built the double-decker piers because all the ships we were building had

54 The Association of Defense Communities is an organization that promotes community/military partnerships, primarily to support communities facing base closures or defense adjustments.
higher freeboards and they needed the piers to be higher to get to them and because it got the utilities out from under the pier . . . They built these double-decker piers in the early 2000s because the piers on the base are old. Some of them are quite low. They'd be low. It wouldn't matter if there wasn’t sea level rise, they’d still be old and low. . . . To say that the piers were built for sea level rise, it's just ludicrous and yet there it is in the *Harvard Business Review.*” Captain Vanderley, the Commanding Officer of NAVFAC Mid-Atlantic agrees, suggesting that the media has mistakenly highlighted the double-decker piers as an adaptation strategy; in reality, the piers happen to offer that co-benefit.

“Newer piers are all double-decker. It's really because it's just so much easier to maintain and protect those utilities. It just so happens that also makes them much more resilient to sea level rise. That's a good thing. And our new piers, I would anticipate will all be constructed with that sort of a model. When we go out there and show that, ‘Hey our newer piers are more resilient,’ sometimes I think people misinterpret that to say, ‘The Navy is building all its new piers differently in response to sea level rise.’ That's not entirely true because we started building that way before sea level rise was really on anybody’s agenda.” As Vanderley hints, other media outlets including *Rolling Stone* and *Public Radio International* have circulated the pier story as representative of Navy adaptation (Beeler, 2016; Goodell, 2015).

In a similar vein, some environmental advocates have been quick to turn to the DoD as an ally and exemplar of climate action in light of an otherwise hostile administration. Sharon Burke warns that this is ill-advised. “. . . we have a government that's hostile to doing anything on climate change. The only element of this US government that has acknowledged that it's a problem is the Secretary of Defense. All of a sudden, lots of environmental groups are trying to flood the zone. They’re trying to get in on climate security, but again, they’re a warfighting institution, that's what they do. I think if you approach them, understanding that and understanding the limits of how they should engage on this issue that's fine, but if you want them to be your climate change organization, it's not going to happen. . . . you’ll see advocacy groups saying, there's so much support in the military on climate change. There is not, that’s not true.” At a meeting of the Center for Climate and Security Working Group, there was a similar sense that while the DoD is seen as the federal agency most receptive to climate change, advocates should not attempt to tap them as the sole solution and that the DoD is “tired of issues being contorted to be security.”

When there has been military leadership for climate action, it has often been the result of individual champions as in Norfolk and San Diego. Retired Brigadier General Gerald Galloway, a member of the CCS Advisory Board, suggests that Dennis McGinn, Assistant Secretary of the Navy for Energy, Installations and Environment from 2013-2017, was instrumental to the Navy addressing climate change. “Denny McGinn, who was on the Board [CNA Military Advisory Board] . . . became the big spokesman for this . . . he's full of enthusiasm, and that made the difference because he was somebody that everybody in the Navy knew was behind doing something about these sorts of things. It wasn't just DOD telling us to do it.” In one specific example, Joe Bouchard suggests that McGinn recruited DoD support for the Hampton Roads Intergovernmental Pilot Project so that it could effectively address the infrastructure needs of all of the services in the
region rather than just the Navy. At the time, Ray Mabus, the Secretary of the Navy from 2009-2017, was also concerned about climate impacts which helped to reinforce this work “. . . he [Ray Mabus] was all over energy and he was all over alternative energy sources. He was all over climate impacts. He really believed in this stuff and he really pushed a lot of it. I think that also encouraged the Navy to be more proactive than it would have been on its own (Phillips Interview).”

Even before the Trump Administration, referencing the military was seen to lend a hard-headed bent to climate risks, replacing a “soft” environmental narrative. In 2015, during the Intergovernmental Pilot Project in Hampton Roads, Secretary of State John Kerry made remarks on climate change and national security insisting that this is “not just about Bambi; it’s about all of us in very personal and important ways.” He went on to detail the litany of ways in which climate poses a national security threat, from increasing disasters, to an opening Arctic, increasing instability and compromised readiness. Even while climate security has become a fairly mainstream narrative, it has been prone to backlash. Kerry felt compelled to point out that former Secretary of Defense Chuck Hagel had been labeled a “tree-hugger” for linking climate and national security (Kerry, 2015). Since 2010, Retired Rear Admiral David Titley, original head of the Navy Task Force Climate Change, has been framing his climate security talks in terms of “people, not polar bears.” He finds that there is often suspicion attending the climate security agenda that this is a case of environmentalists taking another tack.

As a result, climate security advocates walk a fine line, hewing to a “realist” argument. They keep their distance from those who assign too much climate ambition to the Pentagon, but at the same time use the defense establishment’s acceptance of the threat to persuade policy-makers and the public to address climate change. According to Andrew Holland, COO of the American Security Project, in the early days of promoting the climate security agenda, there was more focus on convincing the military that this was an issue whereas now the effort is directed toward communicating to policy-makers and the public that the military does take climate seriously. Regardless of the extent of military policy, resources, and construction targeted to climate change, the perception of military leadership continues to be useful for climate security proponents. While certain individuals within the military have acted as adaptation champions, no part of the military as an institution would serve as a public-facing leader. As Kit Chope, former Commander of Naval Station Oceana and VP of Sustainability at the Port of Virginia commented, “when I talk about champion, the United States Navy is not going to be the champion, . . . they just politically, legally . . . they can't be the advocates for those kinds of things.” But others, largely retired officers and defense professionals, do that work for them. This work consists of promoting the climate security agenda in general and pursuing targeted policy solutions in particular. This climate security project has a broad remit beyond the urban built environment, but does have significant implications for joint urban/military adaptation.
5.3. Extending urban/military climate security: advocacy and policy

5.3.1 Multilevel advocacy: building momentum for adaptation

The most prominent group promoting the climate security agenda is the Center for Climate and Security (CCS) founded in the early 2010s by Francesco Femia and Caitlin Werrell. They take a comprehensive approach to advocating for climate security, engaging a full range of strategies from conducting research to convening events and advocating for policy. John Conger, who initially joined as an advisor, and became the director, noted that the center’s approach was similar to his when serving in the Office of the Secretary of Defense. “Their raison d’être is very similar to the stuff I was pushing, their philosophy on all these things is very similar to what I pursued when I was in the Pentagon. Quite pragmatic, very practical.” According to the Center’s mission statement, they have adopted a “clear-eyed, explicitly non-partisan approach (CCS Staff, 2019b).”

Much like Sherri Goodman did in 2007 at CNA, Femia and Werrell assembled an advisory board early on largely consisting of retired admirals and generals as well as high-profile security experts including Goodman herself. The board now numbers over twenty-five strong with ties to all of the military services, philanthropies such as the David Rockefeller Fund, and other research institutes such as the Hoover Institution at Stanford University. With a full complement of retired officers disseminating this vision, the center serves as a significant cross-over point between the defense establishment and policy world. The board members have been key advocates, giving congressional testimony, meeting with congress people behind the scenes, and giving public-facing talks. Each time, they trot out the well-worn trope of climate change as a threat multiplier while also deepening the discussion with ties to specific issues and locations.

Among their program areas, they name issues such as “The U.S. Asia-Pacific Rebalance, Climate and Security” and “Technology, Climate and Security.” Urban/military collaboration is not one of these. However, they have pursued a concerted outreach program to urban areas with a large military presence, holding public events not only in Hampton Roads and San Diego, but also Seattle, South Carolina and North Carolina (Fig.5.3)55. For each event, they hew to a common template, convening a mix of their most relevant and adept experts, commonly including Retired Brigadier General Stephen Cheney and Retired Rear Admirals Ann Phillips and David Titley with congress people and local officials to introduce their argument: first, climate is a threat to the military mission and second, installations and communities have common ground for developing

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resilience. Publicizing an event held in the shadow of The Citadel in Charleston, South Carolina in 2018, they highlight the intersection between installation and community decision-makers, proclaiming on the CCS website, “Mayors, Military Leaders and City Officials Raise Concerns about Sea Level Rise Threats to South Carolina’s Military and Civilian Communities.” This was a version of events they had organized in Seattle and San Diego the previous year, outlining the intersection of climate change and the military mission as well as federal, regional, and local responses to climate risk (CCS Staff, 2019a).

For the CCS, joint urban/military adaptation is not an agenda item itself, but appears to be a means to serve the larger agenda of developing “robust adaptation policies that seek to manage the unavoidable, or “locked in” threats to security.” These events often feature excerpts from one of two films, *The Age of Consequences*, a documentary which expounds on the threat multiplier message, and *Tidewater*, which zeroes in on Hampton Roads as the archetype of shared urban/military vulnerability (Scott, 2016; Sorkin, 2017a). Both feature many of the same spokespeople who serve on the CCS advisory board and tend to dominate the climate security field; *Tidewater* also includes some of the key local adaptation champions in Hampton Roads.

![Climate Change Impacts on North Carolina’s Coastal Military Communities](image)

**Fig.5.3** The fact sheet for a Center for Climate and Security event in North Carolina foregrounds the extent of military presence in the state and military leaders acknowledging climate impacts.

Recapping the San Diego CCS event for attendees, Shiloh Fetzek, a senior fellow with the Center, emphasized common ground between Hampton Roads, San Diego, and other coastal communities while suggesting that San Diego could serve as a model. This was largely aspirational at the time, as there were no formal efforts in place for joint urban/military planning. Fetzek contends “… the new documentary film *Tidewater* examines sea level rise in the Hampton Roads, Virginia area, and describes many of the issues common to San Diego and other coastal communities that support concentrations
of military installations. It very effectively illustrates how sea level rise impacts both local communities and national security, as well as the need to coordinate between all levels of government, the private sector and civil society organizations in order to address the challenge. . . . during the panel discussion following its premiere in Washington DC on Monday, a panelist who is a retired senior military leader and closely involved in organizing climate resilience efforts in the region outlined some of the difficulties local governments have in coordinating with each other and the state to address the issue effectively. The San Diego story, as you are aware, is one that bears amplifying around the country (Fetzek, 2017b; Sorkin, 2017a).” In spite of this optimistic framing, the impact of these one-day forums is likely small. Following the San Diego event, some of the local climate leaders suggested that while it facilitated a valuable conversation, there was little local momentum to carry forward that particular approach to climate action.

In contrast, the concerted efforts of champions with ties to both regional climate leadership and the national climate security network have had more impact. This has been evident in both Hampton Roads and San Diego where CCS Advisory Board members have played an important role in promoting adaptation. In Hampton Roads, Retired Rear Admiral Ann Phillips has had an impact on building networks and delivering projects (see Ch.3, 3.3.2) and in San Diego Retired Rear Admiral Len Hering was instrumental in developing the Memorandum of Agreement (MOA) between the Navy and the Port of San Diego (see Ch.4, Sec. 4.3.1). Sherri Goodman makes the point that these military leaders with local ties are uniquely suited to be effective champions for climate security. “When you talk to Admirals like Ann Phillips and . . . Kevin Slates . . . also . . . Colonel Paul Olsen. They’ve had decades of military experience, in uniform, they are the military culture and yet they’re very seized with these issues and the impact, not only on the military, but on the communities where they live.” These leaders play an important bridging function, not only between the local military establishment and civilian climate efforts, but between the higher level climate security agenda and local urban/military collaborations. By extension, other retired officers with ties to specific communities may become the influential climate security champions in those locations.

As a result of these multilevel connections, models for urban/military collaboration do resonate between locations. Phillip Gibbons, Sustainability Manager for the Port of San Diego who crafted the language for the MOA, notes that he carefully positioned San Diego’s efforts as “the first agreement of its kind on the West Coast” in reference to previous urban/military projects in Hampton Roads. However, the San Diego agreement was sufficiently noteworthy that Phillips contacted him to speak about the achievement at a climate security event in DC. In addition, speaking in support of the MOA at a Port of San Diego Board Meeting, Len Hering invoked Tidewater, the documentary about Norfolk to emphasize the urgency of action in San Diego. “. . . if you’ve not seen the movie Tidewater by Roger Sorkin, I suggest you do so because it unveils the realities of sea level rise and the consequences to national defense and for us here in San Diego understanding that as power shifts from the East Coast concentrating to the Pacific Rim, San Diego becomes a more and more critical defense element in the support of our security going forward . . . (Hering, 2018; Sorkin, 2017a)”
Though perhaps unaware of the connection, Port Chairman Rafael Castellanos referred to the words of another CCS board member, Retired Admiral Sam Locklear in making the case that sea level rise is a threat to security (see Ch.4). This has been a continually self-reinforcing process as any officer or senior security official who disseminates the climate security message is an obvious recruit for the CCS board. In one example, these multilevel connections have transcended the level of rhetoric, reaching into policy. Gibbons noted that the NAVFAC Adaptation Handbook has been a useful resource for the Port, so much so that they might choose to borrow from it, use it as a model, or simply adopt it.

Models for achieving climate security not only circulate between particular local contexts. The details of the particular also serve to advance the general agenda. Phillips has noted the benefit of being able to draw on her local experience in Hampton Roads when advocating for national policy. “In the context of national security, it turns out that being able to describe the details of what’s happening here [Norfolk] is valuable.” This is the climate security project at work as models for urban adaptation resonate between locations and levels of governance (Fig.5.4).

![Fig.5.4](image)

*Fig.5.4* As part of the climate security project, champions promote the agenda across locations and levels of governance. Diagram by author.

However, the project is not always successful at advancing action. A number of those involved in the Hampton Roads Intergovernmental Pilot Project were critical of its lack of concrete outcomes, frequently noting that because it was stymied by governance challenges its greatest contribution was relationship building (see Ch.3, Sec. 3.3.4). Becky Patton, a program manager in the Office of the Secretary of Defense who worked with John Conger in administering the projects noted that the other two (discussed below, Sec. 5.3.2) were more successful, producing focused action plans. The enormous scope of the Hampton Roads project made it more difficult to define that kind of focused approach. Others involved suggested that the Hampton Roads project suffered from an excessive spotlight with conspicuous proponents such as Senator Kaine and Assistant
Secretary of the Navy Dennis McGinn drawing attention; the process may have been more productive without the outside attention. This suggests that at times, the multilevel strategy can be counterproductive for the climate security project.

While the Center for Climate and Security is the only organization entirely dedicated to this agenda, a closely linked network of other advocacy organizations also features climate security. CEO of the American Security Project (ASP), Retired Brigadier General Stephen Cheney is one of the most frequently featured advocates for climate security, appearing often in a wide range of media and events as well as testifying before Congress. Consistent with this, Cheney participates in CCS events and they feature his opinion pieces to bolster their message. ASP features climate security as one of their twelve major issues ranging from nuclear security to economic diplomacy. Committed to “engaging Americans where they live (ASP Staff, 2019),” in 2014 ASP conducted a nine-state tour beginning in western Pennsylvania and continuing on to Colorado, Tennessee and Texas, emphasizing that climate change is not just a coastal issue (“American Security Project Pushes Climate Change Awareness,” 2014). Andrew Holland, the COO, notes that at events around the country with local elected officials they “use the interest of security officials as leverage.” For example, when they are close to a base, they’ll go to the base and highlight what they’re doing while also discussing how the military is addressing climate more broadly.

As a senior fellow at the Wilson Center, Sherri Goodman continues to develop her work on climate security with a wide range of applications including a recent focus on the Arctic. CAN, where Goodman originated the project, also continues to contribute to this agenda with the Military Advisory Board regularly releasing reports on climate change, energy, water stress and other factors in international conflict. At New America, Sharon Burke works on resource security with a focus on international conflict. At the Union of Concerned Scientists, Shana Udvardy works as a climate resilience analyst, with an interest in climate and national security. She was one of the authors of the report *The US Military on the Front Lines of Rising Seas* which is widely cited for the statistic that 128 U.S. military installations will be vulnerable with three feet of sea level rise (Union of Concerned Scientists, 2016c). For all of these security professionals and their organizations, only one facet of their work addresses the urban arena, but they have each made contributions, implicit or explicit, to urban/military collaboration as a form of adaptation planning.

Another group, which recently rebranded from the American Seawall Coalition to the American Flood Coalition to be more geographically inclusive, is less concerned with raising awareness and holding dialogues about climate security and more focused on shepherding specific policy solutions with a military angle. Retired Colonel Paul Olsen, Former Commanding Officer of the U.S. Army Corps of Engineers Norfolk District, who acted as one of the key adaptation champions in Norfolk (see Ch.3, Sec. 3.3.2) is one of the founding members of the group. As National Policy Director, he is not satisfied with making the argument that climate change threatens both installations and the communities on which they depend, or conducting planning exercises which receive funds at the level of “budget dust.” Instead, he argues that because climate change does
compromise readiness by compromising off base infrastructure, military mission funds should be available for off base adaptation. Addressing this succinctly, he calls operational funds the “prize.” “The prize we need to look at is addressing how we use the DOD operational funds to remedy this problem if we truly think it's a readiness problem.” So far, the American Flood Coalition has made significant progress toward this goal; on their website, they laud a major policy initiative which allows mission funds to be used for roads off base, claiming “we successfully pushed through the Defense Access Roads (DAR) program amendment” included in the Fiscal Year 2019 National Defense Authorization Act (NDAA) (AFC staff, 2019). (see Sec 3.2.2 below) Olsen briefly served as a sea level rise advisor to Virginia Congressman Scott Taylor who sponsored this amendment.

With this initiative, Taylor raised the shared urban/military vulnerability of flooded roads in Norfolk to the level of a national concern. “I am also honored to have my amendment included in this year’s NDAA because it addresses the growing issue of sea level rise that threatens to disrupt coastal military installations across my district and the country (AFC staff, 2018).” Olsen also notes that he is proud of this accomplishment. Essentially addressing the local Hampton Boulevard problem through federal legislation, this implies that the flooding of defense access roads is a representative early warning sign, and expands a channel for numerous communities to attain defense resources. Like the Center for Climate and Security’s circulation of adaptation models, this is another example of the climate security project operating successfully along multilevel channels.

5.3.2 Policy for urban/military adaptation

Existing Tools: Latent Adaptation Capacity
Several of the well-established tools for joint urban/military planning have recently been applied to adaptation planning, namely the Joint Land Use Study (JLUS) in Hampton Roads and the Integrated Natural Resource Management Plan (INRMP) in San Diego. Another tool has clear potential to be used this way, Readiness and Environmental Protection Integration (REPI) partnerships. In addition, the Intergovernmental Pilot Projects conducted across all three military departments could serve as a model for future projects. In Norfolk, Christine Morris, the Chief Resilience Officer, noted the importance of beginning the joint planning process by adapting tools already available to the military because of constraints on military/civilian planning. In initial discussions with local military leaders she found that “. . . the Joint Land Use Study was the only vehicle that he had for interaction with the civilian world which is why we are using it. I'm not sure it's the ideal vehicle. . . . We are trying to see if it's a vehicle that can be used. And if it's not, what needs to be changed with it. Again it's a laboratory test to see if we can use something like this and get to results beneficial to all parties.”

56 Hampton Boulevard, which is the main road connecting Norfolk and Naval Station Norfolk, has become notorious for flooding that impedes access to the base.
The JLUS program, administered by the Office of Economic Adjustment (OEA),\textsuperscript{57} was created to help state and local governments adjust and diversify after major DoD actions such as Base Realignment and Closure (BRAC) and to promote compatible use between installations and surrounding communities in the face of pressure from urban growth. From the program’s inception in 1985 through 2017, 135 JLUSes had been completed, with studies in almost every state (Fig.5.5) (Eitler, 2017). A land use planning tool, the JLUS presents opportunities and limitations. Speaking specifically in regard to Hampton Roads, Sherri Goodman notes that the study may facilitate inter-jurisdictional cooperation, but stops short of implementation. “. . . those Joint Land Use Studies can be very useful . . . It allows federal dollars to flow to the community to overcome some of the barriers when you have the seventeen different jurisdictions. But the study itself can only go so far. You can do a study, but then somebody has got to pay to implement. People have to agree on what the priorities are. That can't be solved fully by the Defense Department when you have 17 jurisdictions.”

However, the Western Regional Office Director for the OEA indicated that facilitating regional cooperation rather than local planning has become a goal for the JLUS program over the past decade. Further, while the office is unable to fund construction, at times they do provide implementation grants to fund local policy updates, such as ordinances or zoning. In addition, project managers with experience navigating the federal bureaucracy may be capable of building a coalition of federal agencies to provide more implementation funding, though he emphasizes that the main benefit to communities is technical assistance. This suggests that the JLUS may be more useful to municipalities and regions with relatively lower planning capacity.

\textsuperscript{57} The OEA assists communities with economic development after defense adjustments and facilitates community/military planning to manage “encroachment” into the mission.
Fig. 5.5 The number and geographic coverage of previous Joint Land Use Studies indicates planning capacity that may be useful for adaptation. Source: OEA.

According to the Compatible Use Program Director for the OEA, JLUS grants are typically $250,000 for planning though they can be up to $600-800,000\(^{58}\). Though the JLUS is a relatively low cost program, the OEA has limited resources available, so it is not a reliable planning solution. John Conger, former Principal Deputy Under Secretary of Defense (Comptroller), suggests the resources it requires are a major limiting factor. “JLUS is a long process. It costs money if you're flying lots of staff. You spend money on consultancies. OEA can only afford to support a certain number of JLUS studies a year so it is not a solution that will address everybody's issue. It might be a tool that you use in places where you really know you need to do a deep dive. It's a great tool, but it is one that you only have so many times you can use it a year.” While the lack of implementation funding is an obvious limitation, climate politics present another. In the DoD Directive on adaptation (4715.21), the JLUS Program is specifically cited as an arena in which to consider climate change adaptation when engaging with state and local governments. In the NAVFAC Adaptation Handbook, the JLUS is also cited as a tool for community coordination.

However, those managing JLUS projects have been reluctant to make a direct link to climate change. This may be a temporary issue as the change in administration has

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\(^{58}\) The grant terms require an in-kind donation of staff time and 10% of funds from the local jurisdictions.
created fear of reprisals for carrying out explicit climate policy. The OEA Compatible Use Program Director emphasized multiple times that the OEA does not have “the legal authority to plan in response to sea level rise” or climate change. A consultant for the Norfolk/Virginia Beach JLUS, while not operating under the same political constraints, made a similar point. “...we've been very clear that the Norfolk study is not a study on sea level rise. It's a Joint Land Use Study that is going to look at a lot of factors one of which is potentially sea level rise and flooding because it impacts the Navy's ability to carry out its mission.” With this degree of circumlocution, the JLUS is a fairly weak adaptation tool, likely only applied to that end when there is overwhelming local support.

In 1997, an amendment to the Sikes Act59 mandated that all military installations with significant natural resources, approximately 380, create Integrated Natural Resource Management Plans (INRMPs) (U.S. Fish and Wildlife Service, 2019). Military/civilian partnerships are an integral part of the program: the U.S. Fish and Wildlife Service is required to act as a partner, but the governing DoD Instruction60 creates broad authority for further partnerships between DoD installations and states, local governments, nongovernmental organizations, and individuals “to provide for the maintenance and improvement of natural resources or conservation research on or off DoD installations (italics added).” The INRMP was the basis on which the Port of San Diego had developed a substantial working relationship with the Navy that laid a foundation for their MOA on adaptation planning. The DoD Instruction requires that climate change now be considered in all INRMPs. “All DoD Components shall, in a regionally consistent manner, and to the extent practicable and using the best science available, utilize existing tools to assess the potential impacts of climate change to natural resources on DoD installations.”

While the purpose of the DoD Natural Resources Program is of course to support the military mission, the DoD has taken the conservation mandate seriously. This is not just lip service; Sherri Goodman notes that the DoD maintains considerable conservation capacity, even exceeding the federal agencies whose mission is conservation. “Over the years, . . . the community in the military that does natural resources, cultural resource planning, biology -- it's very robust. There are probably more natural resource planners and biologists in DOD, then there are in the Parks Service, in the Fish and Wildlife Service. They have been able to add it on to their other duties and they have grown that talent and they're very proud of it.” With deep natural resource capacity and a history of producing these plans across the U.S., the INRMP program may offer large latent capacity for military/community cooperation to address climate change. Further, the INRMP can lead to more than planning; the DoD Natural Resource Program provides several funding channels for conservation that supports readiness, amounting to nearly $340 million in fiscal year 2017.

Military/civilian partnerships are also integral to the Readiness and Environmental

59 The Sikes Act, enacted in 1960, requires planning and coordination with state agencies for conservation on military installations.
60 DoDI 4715.03 Natural Resources Conservation Program
Protection Initiative; the DoD has a history of working with The Nature Conservancy (TNC) under this program to create conservation easements that serve the military interest of protecting installations from encroachment and preserving habitat for training. Recently, The Nature Conservancy signed a Memorandum of Agreement (MOA) with Naval Base Ventura on the southern California coast to engage in adaptation planning. The base, which is the largest employer in Ventura County, is situated within a wetland area. Because it is vulnerable to sea level rise, the Conservancy is working with the base to develop green infrastructure to maintain the base in its current location. The MOA allows for research and information-sharing and authorizes cost-sharing without providing for funding, so REPI will be one potential mechanism to fund easements within the floodplain. Lily Verdone, Project Director with The Nature Conservancy notes that after this MOA was signed, she convened colleagues working throughout the U.S. on DoD adaptation projects, and they have discussed creating an agreement that would apply DoD/TNC wide to facilitate further work on adaptation (Verdone Interview).

Verdone has expressed that this project could serve as a model for other communities. “Our work together in Ventura County will provide a case study for how other major landowners, coastal communities and naval bases across the country can effectively adapt to climate change and will demonstrate the crucial and unique role that nature can play in those preparations (Wittenberg, 2016).” Like the INRMP, REPI has an associated funding stream, rendering both of them more powerful tools than the JLUS. Though the OEA Compatible Use Program Director disavowed any link between the JLUS program and climate planning, she did suggest that flood-prone parcels in Norfolk designated to be set aside as green infrastructure could be appropriate for REPI funding. Retired Brigadier General Stephen Cheney has also noted that REPI previously served an important stewardship function, but its importance has grown with climate change. “The protection of these buffer zones has grown in significance in recent years due to the effects of climate change. With extreme weather becoming more common, these buffer zones are critical for the protection of the base (Cheney, 2017).” Taken together, these three tools, the JLUS, INRMP, and REPI programs, present significant untapped capacity for joint adaptation planning.

The Hampton Roads Intergovernmental Pilot Project (IPP) was one of three pilot projects, each one representing a military department. The pilot projects were by their nature one-offs, however they could serve as models for future collaboration, particularly under an administration that seeks climate action. John Conger, the Director of the Center for Climate and Security and former Principal Deputy Under Secretary of Defense (Comptroller), suggested that the main goal of the IPPs was to develop a simple, replicable process. “We gave them the freedom to design them, but what the guidance . . . basically said was, ‘My goal at the end of all of this is to come up with a replicable process that I can use at every base that is not excessively burdensome, that allows the community and the base to work together.’ Figure out what they need to know from each

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61 The Hampton Roads IPP served as the Navy project, the Air Force conducted a pilot in Mountain Home, Idaho and the Army conducted theirs at three sites of the Michigan National Guard.
other, what the right questions are to ask each other, . . . what should be the priority as they contemplate this adaptation planning?"

The IPPs delivered mixed results. Becky Patton, who worked with Conger to administer the projects, suggested that two of the three efforts produced effective action plans. The Mountain Home project resulted in an MOU between Mountain Home Air Force Base and the community to address water insecurity and energy conservation while the Michigan project resulted in action plans to manage wildfire and flood risk between three Army National Guard installations and the surrounding regions. In contrast, the product of the Hampton Roads IPP was a lengthy report that was not directly actionable; instead some of the recommendations are being developed through the ensuing Joint Land Use Studies (Air Force Community Partnership Program, 2016; Humes, 2016; Steinhilber et al., 2016). The effort to consolidate lessons learned from the three IPPs into an appropriate form is still under consideration (Patton Email). This effort may have slowed under the Trump Administration, but given that the recent DoD reports to Congress have highlighted widespread installation vulnerability, lessons from the IPPs could still meet a demand for installation resilience planning, operating on the premise of interdependence with the community.

**Emerging Tools: Creating Adaptation Capacity**

Though all of these tools entail joint planning capacity, none meet the emerging need for joint infrastructure funding that climate security advocates have identified. In one prominent example, Paul Olsen, National Policy Director of the American Flood Coalition, suggests that the Navy should be able to make the argument that off-base infrastructure is essential to maintaining readiness. “. . . in my experience, what needs to be done is, if the Navy can make the linkage that construction and sea level rise mitigation or planning that is done off base, has a distinct positive effect to improve their mission readiness on base, then there should be an authorization or a legislative fix put in place where they can use their operational funds to execute off base construction mitigation projects.” The Flood Coalition partially achieved this through the Defense Access Roads amendment in the FY19 National Defense Authorization Act.

The Defense Access Roads program has existed for a century, allowing the military to contribute to the cost of construction and maintenance of public roads that provide access to military installations and replacement of roads closed to the public because they are taken over for military uses. The 2019 amendment extends this authority narrowly, authorizing appropriations for closures due to “mean sea level fluctuation and flooding.” The amendment also authorizes defense appropriations for repairs or additional infrastructure where flooded roads have previously impeded access to military installations. As Congressman Scott Taylor noted, this directly solves problems in his district; chiefly, this would immediately allow funds to be appropriated to improve flood-prone Hampton Boulevard, the main route linking Naval Station Norfolk to the City of Norfolk. Even within the narrow scope of this statute, as more and more low-lying installations on the East and Gulf Coasts are impacted, appropriations for flooded roads could become substantial.
Another major initiative in the FY19 NDAA, the Defense Community Infrastructure Program, could support a much broader scope of urban/military adaptation beyond roads; at this point it lacks funding, but the program lasts for ten years, allowing time for appropriations to be authorized. The redefinition of installation resilience in the NDAA to include “transportation, logistical, or other necessary resources outside of the military installation” (italics added) reinforces the operating assumption that bases cannot function as islands in any military planning. However, the program goes further, allowing grants to “address deficiencies in community infrastructure supportive of a military installation” to “enhance the military value, resilience, or military family quality of life at such military installation.” Infrastructure as defined in the act runs the full gamut including transportation, schools, hospitals, emergency facilities, electricity, gas, water, and wastewater. This new statutory authority could facilitate most aspect of joint resilience. Illustrating its direct applicability, many of the action items outlined in the three Intergovernmental Pilot Projects such as investment in shared rail, sewer, and water services and joint flood protection could be funded this way.

5.4. Extending urban/military climate security: interdependence and credibility
The climate security project reaches into diverse locations, forms of outreach, and policy avenues, making it clear that urban/military collaboration for adaptation is not isolated to Hampton Roads and San Diego. To advance the primary climate security project, advocates continue making the case that first, as a national security issue, climate change should be a concern for a broad, bipartisan cross-section of policy-makers and the public. Second, regarding urban/military collaboration, they make the case that installations are always interdependent with the surrounding community. These rationales that resound in Norfolk and San Diego are poised for broader impact as they are offered as justifications for the climate security project elsewhere. Just as in both of those locations, underlying urban/military relations create the conditions for collaboration, shaping the likely extent and dynamics of further interaction.

5.4.1 Existing urban/military relations as a condition for collaboration
Regardless of climate change, in most locations where military installations are intertwined with communities, most communities have an underlying economic motivation to work with them. As in Hampton Roads, the prospect of Base Realignment and Closure (BRAC) has become one of the touchstones of the relationship. Reflecting this, “defense communities” have formed an association (The Association of Defense Communities) dedicated to supporting communities facing defense adjustments and base closures. Part of their mission is advancing community/military partnerships because communities decrease the likelihood of base closure when they work to proactively accommodate the military. Under the auspices of this association, communities vie each year to be named one of five “Great American Defense Communities.” The group identity of “defense community” stems from a military presence, but even more from the threat of military withdrawal. As a location fairly resilient to BRAC because of the Pivot to Asia, San Diego is the exception rather than the rule.
Sharon Burke notes that small, heavily defense dependent communities are, of course, far more vulnerable to base closures than larger cities. “Homestead Air-force Base was closed. . . . if you go to a place like that, to a base that's been closed, you will see the devastation it leaves behind in that community. Lots of shuttered businesses. . . . It would be worth seeing what happens when a base leaves. If it's the Presidio in San Francisco, it's not a problem. It's extremely valuable real estate. If it's Rock Island Arsenal in Upper Northeast Illinois it can devastate the community. Sometimes, it's the only employer in town.”

At the same time, bases have a motivation to maintain a good relationship on an ongoing basis with the surrounding community. Burke continues, “this is an all-volunteer military force. They have to recruit from the civilian world. The civilian world has to value them and what they do. . . . They need the support of the community around them. . . . At home, your service depends on the support of the community around you, your ability to recruit, all of that.” She suggests further that if a community were to approach a base about jointly addressing an issue of local concern, they wouldn’t say no. By extension, James Balocki, the Deputy Assistant Secretary of the Navy for Installations and Facilities, noted similarly that it is important for bases to work with the community to maintain good will because the military depends on an all volunteer force. The staff of public affairs officers and community planning liaison officers at each base suggests that regardless of how effective it is, there is an ongoing effort from the military side to maintain the community relationship.

5.4.2 Rationales for urban/military adaptation

Military as Credible Messenger

Locally, in both Hampton Roads and San Diego, the military has been key to framing climate change as an apolitical issue that deserves attention from a broad spectrum of decision-makers and the public. Using the military as a “credible messenger” has helped to elevate adaptation or resilience above the partisan fray in which it is so often mired. The same is true at a larger scale, where nationally, climate security advocates have deliberately and often successfully enrolled the military perspective to reach a bipartisan audience.

As Sherri Goodman indicated, frustration with partisanship was one of the instigations for explicitly developing a climate security agenda in 2007 by enrolling defense professionals in the effort. The foundations that approached her were strategically attempting to overcome the U.S. partisanship concerning climate change that contrasted with most European countries. Cheryl Rosenblum, who took over Goodman’s role as Executive Director of the CNA Military Advisory Board, notes that “the national security frame has allowed us to have conversations on climate change that rise above the polarizing politics of climate policy. By looking at the issue as a threat to national and homeland security, bipartisan discussions can take place on the need for climate policy. This frame also allows more conservative policy makers to engage on this issue through the lens of national security, rather than being viewed as ‘left leaning.’ If climate change is viewed solely as an environmental issue, then it is difficult, if not impossible in today’s
political arena, to foster bipartisan discussion. Examining the national security implications of this issue has fostered greater bipartisan discussion and support for policy development.” This has been effective not only at a federal level, but at a state level as well, where bipartisan policy discussions have occurred in “purple states” and those with a large military presence.

In a similar bid to catalyze difficult conversations, in the film *Tidewater*, the director, Roger Sorkin, made a point of using the military as an “apolitical, credible messenger” to find common ground with the figurative “Uncle Frank.” Though the film vividly depicts the consequences of sea level rise in Hampton Roads, he deliberately avoids mentioning climate change in order to reach skeptics with the message that anyone who cares about the well-being of the military or who pays taxes should care about the issue which he refers to as “environmental security (Sorkin, 2017a, 2017b).” American Resilience Project, the non-profit that produced the film, has organized screenings for legislators in DC and state capitals; the film has also become one of the Center for Climate and Security’s preferred outreach tools at their events around the country.

This type of outreach to conservatives has gone beyond raising awareness to influencing policy-makers. Galloway notes that when he and other climate security advocates approached Republican Congressional staffers several years ago, they were surprisingly receptive to a message concerning military readiness. Galloway went further, using the right-leaning climate security message to advance the prospect of joint adaptation as just another sensible solution. ‘we would go . . . to Republican staffers and say, ‘Hey, don't be mad about using biofuels, don't be mad about this energy approach. It's really for the good of the service. Don't you want them to be ready to go?’ And eventually, we did a briefing for maybe a hundred staffers and there was no pushback at all. I was amazed. They were just, ‘What are the budget implications?’ And what we've said is . . . if you can identify the risk, if you can then develop your strategy, and then program how that money is, you begin to lay it out, it makes common sense. And then you get with your local community and say, "Guys, are we going to be able to work together on this?" Because some things you have to do together.”

Nancy Bragado, who worked as a planner with the City of San Diego for many years and contributed to the Third National Climate Assessment suggested that the prospect of Navy support for adaptation might convince any local leaders lagging in their commitment to the issue. “if you start sharing more information that the US Navy is concerned with climate change and sea level rise and is willing to invest in this type of protection, then maybe that will really be a wake-up call for some cities or local leaders. I mean the US Navy is not known for being liberal or being whimsical in their decisions. It might make it more of a push in terms of taking some of the harder steps in terms of actual funding, relocation of infrastructure, redesigning infrastructure so that it can withstand greater degrees of sea level rise. Get it out of the theoretical and a little more onto the ledgers in terms of what needs to be done.” With this assessment, she gets at the core of how the military serves as a credible messenger, both through assumptions about their political stance and a perception of them as a stalwart institution making carefully considered, well-grounded decisions.
Interdependence over Islanding

Even after gaining acceptance for climate as a security issue, urban/military collaboration requires further justification. A clear recognition of infrastructural and community interdependence served as one of the driving rationales for urban/military collaboration in Norfolk. Interdependence has become especially salient there as road flooding has made it difficult, if not impossible, for military personnel to report to work on numerous occasions. Even if they have been able to reach the base, conditions for their families off base hinder their ability to work. These and other purely infrastructural impacts of urban/military interdependence have helped to motivate joint planning for adaptation. While Norfolk is something of a “canary in the coalmine,” these conditions are not limited to Hampton Roads. Climate security advocates frequently point out this type of interdependence to illustrate the need for joint planning.

Before September 11, 2001, there was a general move toward “open bases” integrated into the community. Celeste Werner, Vice President of the Matrix Design Group, which does extensive work for the DoD notes that at that time, only areas that required security remained fenced in, but after 9/11, the fences went back up. In the late 2000s, a move arose in the security community toward islanding bases to achieve resilience. In the 2008 Defense Science Board report *More Fight, Less Fuel*, the authors recommended that the DoD pursue islanding to isolate certain installations from the grid and make them self-sufficient from an energy perspective (Defense Science Board Task Force on DoD Energy Strategy, 2008). They recommended pilot projects to test the policy and plans that were in place to support islanding. There was subsequent pushback against this approach as security experts realized that pragmatically, islanding would be almost impossible to achieve, not just for energy, but for every service that supplies a base. Sharon Burke notes this reaction. “I heard a lot of military folks respond to that, that you can't island because they’re integrated into the community in a variety of ways. So it's not just electricity, they also get their water from the community, they get their food from the community. A lot of their people who work on base live in the community, and commute from the community. So you can't island a base. It is integrated into the community around it.”

While interdependence has recently become a guiding principle in Hampton Roads, it has also gained currency at higher levels. Though the concept has come in and out of vogue, Retired Brigadier General Gerald Galloway notes that based on his experience, addressing de facto interdependence has historical precedent in the U.S. military. “In 1982, I was the chair of an advisory group for the army looking at water supply for military installations. Water supply for military installations means the same thing as water supply for the community, the greater community, because you can't have one without the other. You can't say we're not going to give you any water, and you're not going to give us any water. We need to know what the rights are, all those sorts of things. They've been doing this forever. They just don't recognize that this is not much different, that if we're both going to be subject to extreme temperatures, what's that going to mean to the roadways? Will the asphalt roads fail? [What do you] do if I have perfect roads on the base and you can't get in the base? Or if their roads are too low?”
Regardless of whether the connection is made to military precedent, recognition of interdependence is increasingly accepted as a necessary operating assumption in the climate security community. Cheryl Rosenblum, Senior Director of Strategic Development at CNA also refutes the notion of military bases as islands, explaining that they are fully intertwined with the surrounding community, not only through physical infrastructure, but through professional and social networks. “The traditional argument for islanding is that installations generate their own power, they have their own water, they have a fence, so they’re not really part of the community. However, this perspective ignores the fact that workers on an installation live in the surrounding community, and rely on the surrounding community for medical care, income, social resources. Military installations are supported by all the businesses in the surrounding community. You can’t say, ‘Well, the installation is resilient, but the community isn’t.’ Resilience has to be holistic. If the hospitals shut down in the surrounding community, to give just one example, the installation is going to have a problem. And military workers can be hit hard by problems outside the gate. If people in the surrounding community can’t get basic services because of extreme weather events or climate issues, I’m not going to just sit in my office on base and say, ‘My kids are home in the dark, let me get to work.’” Not only do the infrastructural and community interconnections illustrate that the base is dependent on the outside world. Treating the base as an island would create an additional risk, that as basic necessities become scarce outside the fenceline, locals would arrive demanding entry.

Recognition of interdependence within the DoD was a motivating factor for conducting the three Intergovernmental Pilot Projects. John Conger, a former Principal Deputy Under Secretary of Defense (Comptroller), realized that the DoD did not have a framework in place for adaptation projects that crossed the fenceline. “The question then is if DOD is starting to pay attention to climate change issues, and it's starting to think through the master planning and implications of that and the planning implications of that, it becomes obvious fairly quickly that this is an issue that doesn't respect fencelines. Then you start thinking about, "Okay, what are the fence crossing issues that I have to pay attention to that affect me, something happens outside the fence still affects me and the base. How do we work together on that? We reached a point where we realized we didn't know how to set up that cooperative framework."

This was not only a policy idea at the Pentagon, but recognized on base where frequent interactions reinforce awareness of multi-faceted connections. From his experience as an officer, as well as conducting research and engaging as an advocate, Galloway has noticed this growing recognition. “...more and more commanders come in and recognize that they're partners with the local community. They better be thinking about how we are able to address our common issues especially sea level rise and lifelines, water, power, medical, transportation. If you have a hurricane ... How do you get supplies to the base? How do you get supplies to the community? You ought to be working these things together. That's an important issue.”

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62 The DoD-serving think tank where Sherri Goodman instituted the Military Advisory Board.
The Center for Climate and Security’s events in North and South Carolina operated from this premise, convening local leaders along with military leaders to discuss how “addressing climate change risks must go beyond military infrastructure resilience, to include the resilience of surrounding civilian infrastructure (CCS Staff, 2018).” As in San Diego, these types of events may have little direct impact, but they introduce interdependence as a critical issue in local adaptation discourse where it may be mobilized to support policy. With these consistent multilevel discussions of interdependence, the premise is primed for touchdown in a host of communities with a large military presence.

5.5. Conclusion: opportunity in the military as ally and credible messenger

A strategic framing of the significance of climate change for national security, climate security gained wide acceptance as an agenda and quickly made inroads into the Pentagon. Beginning in 2008, climate change was considered a factor in defense strategies, legislation and policy. However, it was only one factor among many, integrated into policy through “mainstreaming” rather than receiving dedicated resources. Given the diverse array of long-standing global threats, climate change was never going to be a priority for the DoD. But for climate security advocates, the military’s limited climate work was sufficient to frame it as a pragmatic, serious response to climate change. This fueled the second task of the climate security project: leveraging the military as a “credible messenger” to reach a bipartisan audience of policy-makers and the public. Ultimately, this is not just a message to convert climate skeptics; it shapes the urban built environment in concrete ways as advocates promote joint planning using the rationale of urban/military interdependence.

The tension between the perception and reality of military leadership reinforces the notion that the military serves as a “credible messenger.” The military has only gone so far as to integrate basic best practices. In the best case scenarios, this has resulted in cautious, incremental adaptation, but more often than not, has been stalled in a quagmire of deferred maintenance and inattention. The perception alone is sufficient to reinforcing the urgency of climate action, but falls short of achieving significant adaptation. This deficiency is certainly troubling for anyone concerned with the long-term resilience of military infrastructure. But for joint urban/military adaptation, it presents inadvertent opportunities at multiple levels of governance. At the federal level, military vulnerability has created a leverage point for advocates to pursue legislation to fund joint infrastructure; they have achieved concrete policy outcomes which urban regions can begin using to their benefit.

At the regional and local level, it presents another opportunity. The military is not leading on adaptation within their own boundaries and even if they were, they would not lead beyond “the fenceline,” restrained by an apolitical culture, legal limitations, and a distinctly different set of priorities. Where there is a recognition of joint urban/military interests, and a recognition by urban decision-makers of the need to pursue all available avenues, the military leadership vacuum creates space for urban decision-makers to take
the lead. In pursuing collaboration with installations, some of the typical risks of defense dependency linger; base relocation or closure remain a threat to communities. However, these are tempered as base vulnerability shifts the installation/community power dynamic, with the two beginning to operate as more equal partners. In that context, it remains up to urban decision-makers to strategically deploy their part in the malleable climate security project to achieve adaptation aligned with local goals beyond those of pure military interest.
As much as cities attempt to fill a federal leadership vacuum, they do not lead in a vacuum. Instead they leverage any resources at hand. Paradoxically, this includes federal resources even as the federal government retreats from addressing climate change. This research began with the question, do urban leaders leverage “back door” federal opportunities to successfully reinforce their own adaptation efforts and elevate a broader adaptation agenda? In the case of cities with a large military presence, the short answer is yes.

Examining joint urban/military adaptation planning offered a pointed way to study this question, however, this is just one instructive example of urban leaders leveraging interdependence with powerful institutions to obtain adaptation resources. This kind of effort could easily extend to other types of federal outposts or “anchor institutions” with a significant presence in urban areas.

Built on years of explicit work, the climate security project has proven influential. Coalescing from early strategic forays, the climate security project now encompasses a whole apparatus of defense and civilian proponents marshaling the message that climate change is a national security threat to construct credibility for climate action. With its appeal to a nontraditional climate audience, the climate security project has proven an effective vehicle for mobilizing urban/military interdependence in a bid for resources. In Norfolk and San Diego, urban leaders and climate security advocates with national ties successfully galvanized adaptation planning.

While shared, or at least similar, exposure to climate impacts, may seem obvious, recognizing interdependence is not a given. In the case of San Diego, where urban and military interests have become less aligned over time, the two contingents were motivated by a weaker form of cooperation, merely seeking consistency in their planning efforts. In the case of Norfolk, where urban and military interests remain fully entangled even as power relations have shifted, they have both recognized their interdependence, a premise that serves as a foundation for stronger collaboration.

But, Norfolk, touted as a “canary in a coalmine” for urban/military vulnerability, is not just a one-off. Rather, climate security advocates have promoted this as one example of interdependence among a proliferating array of examples. Interdependence itself has become a trope within the climate security sphere; advocates actively deploy this notion as they organize local events, testify before Congress, and promote national policy solutions. In essence, interdependence as a premise for adaptation is being sold through

“... if you start sharing more information that the US Navy is concerned with climate change and sea level rise and is willing to invest in this type of protection, then maybe that will really be a wake-up call for some cities or local leaders. I mean the US Navy is not known for being liberal or being whimsical in their decisions.”

~Nancy Bragado, Former Deputy Planning Director, City of San Diego
the climate security lens which often works to construct credibility, sidestepping the partisan politics of climate change.

Recognizing and acting on interdependence is noteworthy in any case in an increasingly divided era; in this specific case, it is more noteworthy as it defies expectations that the military, historically the paradigmatic enclave, would engage in simple self-preservation, blinkered to impacts beyond “the fenceline.” These tendencies certainly exist, but they have been challenged by a powerful group of advocates, largely retired officers and active security professionals actively making the case that it is in the military interest to breach that fenceline in undertaking adaptation. While this advocacy has been fairly successful, internal adaptation in the military remains a low priority in relation to the central military mission. Therefore, local military leaders rarely seek to engage the surrounding community in adaptation, but they are open to advances from urban leaders. As a result, collaborating with the military becomes an additional tool among a suite of tools that urban leaders pursue to advance adaptation. As far as planning, there are some small advantages to working with the military in terms of resources and technical capacity, and it tends to promote additional inter-municipal collaboration. As far as implementation however, collaborating with the military represents an advantage of a different scale, as it can be a channel to significant federal resources.

There are some serious drawbacks as well. Specifically, adopting the climate security narrative as a shield from partisan politics tends to render adaptation more palatable than mitigation. Ignoring mitigation and the attendant acknowledgement of the human cause of climate change fosters a dangerous path toward maladaptation. More generally, given that this type of collaboration is managed by senior decision-makers, it tends to prioritize economic growth interests over those of marginalized communities. However, the recognition of interdependence at one level may represent a first step toward recognizing other forms of interdependence. The climate security message is malleable, serving multiple agendas, and could be wielded to advance more inclusive forms of adaptation.

6.1. The value of interdependence

Joint urban/military adaptation planning derives momentum from the recognition and promotion of interdependence over islanding. This has repercussions for theory and practice. It counters expectations that adaptation as promoted by urban elites will tend to produce enclaves, or exclusive protected zones, that urban planning involving the military will tend toward authoritarian solutions and that in a relationship of defense-dependency, cities with military installations will be disadvantaged by accommodating military needs.

Four related findings elaborate on and reinforce this central premise of interdependence. 1. Urban lead/military ally: urban leaders initiate joint planning while military installations serve as allies, creating opportunities for the urban contingent to take ownership of the process; 2. Expanded cooperation: Joint urban/military planning operates as a seed for additional forms of cooperation. 3. Credible messenger: the military serves as a credible messenger at an institutional and individual level; individual “expert champions” serve to connect civilian and military cultures as well as levels and
scales of governance; 4. *Credibility machine*: climate security proponents reconstruct authority and legitimacy for climate action in an environment of doubt and competing priorities.

6.1.1. Interdependence: implications for planning and practice

“Islanding” has been promoted as an expedient fix in the military, but it has received significant and consistent pushback. While it may appear expedient to execute a modern version of shoring up fortifications through developing off-the-grid self-sufficiency, this is simply not feasible, nor even based in reality given the interconnectedness of supply chains, infrastructure and workforces. Community leaders, long at the mercy of defense restructuring, have also long been aware that bases rely on the communities around them. Over the last few decades, military leaders have also become more aware of this reliance, developing procedures for addressing interruptions to the smooth operation of adjacent installations and communities. This reliance has been thrown further into relief as climate impacts grow. Interdependence has emerged as a byword, but it is not just the optimistic rhetoric of local boosters bent on preserving their economic foundation; it increasingly issues from the mouths of military leaders who now see greater expedience in shoring up interconnected infrastructure than in developing isolated systems. The instinct for myopic self-preservation has been replaced with a predisposition for more far-sighted collaborative adaptation. This is hardly transformational; it remains incremental and instrumental, driven by the financial realities of budget caps as much as a concern for a collective future.

However, this openness to collaboration offers levers to decision-makers in adjacent communities. In its current form, the narrative surrounding interdependence relies on two main factors, infrastructural and social interdependence. Both implicate the adjacent communities and beyond. In the case of infrastructure, systems ranging from roads to water supply to communication are all enmeshed in extensive networks that require maintenance or adaptation so that installations and communities remain operational at a basic level. In the case of social interconnection, the majority of the base workforce ranging from junior enlisted personnel to civilian bureaucrats to flag officers live off-base in adjacent communities. Representing a large socioeconomic spectrum, these military workers and their families are fully integrated community members; they experience the full array of disruptions to daily life from climate impacts as community members not just as military commuters. Because these military members are fully integrated into the community, installations clearly rely on continued community function to sustain their operations. The alternative, developing a safe “green zone” for all of the people critical to maintaining base operations would require inordinate resources.

With the recognition that bases need cities at least as much as cities need bases, urban leaders can and do leverage their critical role to achieve shared adaptation planning and implementation. However, there is still a risk that based on historical power relations, urban decision-makers will prioritize military needs; instead, they have the opportunity to raise community needs to at least an equal level. Given that the majority of workers on any base are in the lower ranks and lower pay scale, this also presents an opportunity to prioritize the neighborhoods where they live rather than simply high-value infrastructure
and property. Recognizing interdependence theoretically points the way toward more inclusive forms of adaptation, but could easily still reinforce the conventional socioeconomic divisions that exist outside the fenceline. Planners and other urban decision-makers involved in local adaptation could take this as an opportunity, leveraging military needs to access defense resources and using them for shared adaptation that is not only shared across the fenceline, but shared within and distributed across the community.

In the language of institutional barriers, this study engages with barriers to framing, or politically situating policy issues, and fragmentation, or the lack of coordination within and between levels of government. Interdependence is in and of itself a type of framing, one that has great potential to resonate with local priorities. Compared to climate security, interdependence potentially has more local relevance; it also has more universal relevance as it easily encompasses a broader set of issues beyond national security. While the climate security angle was used to some extent at the local level, it seems to have more significance on a national stage. However, by constructing credibility, climate security can be useful to initiating local conversations which then evolve toward recognizing interdependence.

Locally, the value of a place as significant to national security is fairly abstract; what matters is the concrete realities of daily life and recognizing interdependence is a way of addressing that as it acknowledges the daily commute and daily work among other essential elements of daily existence. National and international importance is at most a peripheral concern for locals on a daily basis. Interdependence is likely more effective if recognized from within rather than being foisted on a place or planning process from outside; however, it is a framing that can be cultivated in countless situations. When interdependence does emerge out of local realities, it is based on the concrete stuff of everyday life, but implies interdependence between levels of government as well. In that respect, it becomes an approach to addressing “horizontal fragmentation” at the local level between installations and communities as parallel entities, and “vertical fragmentation” with installations serving as links across levels of government.

Where it has emerged, the recognition of interdependence has largely been galvanized by shared climate impacts and there will be no shortage of those in the near future. However, just because the cases studied here seem to defy expectations of myopic self-preservation, that proclivity could still emerge in seemingly similar cases. That is an area that requires further research to determine whether increasing climate stress can under some conditions foster more recognition of interdependence, and if so, in what cases that is more likely and how that might be strengthened.

6.1.2. Urban leadership: implications for planning and practice

Urban leadership is a much touted but fuzzy concept. These cases of urban adaptation do demonstrate a form of urban leadership, but it is contingent leadership that coalesces as well-connected adaptation champions purposefully cultivate relationships with other levels of government, philanthropies, think tanks, and advocacy organizations. To the extent that Norfolk and San Diego are leaders in urban/military collaboration and the
larger field of adaptation planning, it is through similar forms of networking. Like most cities, the cities themselves lack the resources to address adaptation independently and therefore seek partnerships that lend capacity and resources.

In spite of the almost exclusive focus here, urban/military collaboration should be understood within a larger adaptation landscape. In both cities, collaborating with the military was merely one means of pursuing adaptation. In the same timeframe as the various urban/military plans, Norfolk was also preparing a flood risk study in partnership with the U.S. Army Corps of Engineers\textsuperscript{63}, implementing resilience pilot projects with money awarded through the HUD National Disaster Resilience Competition, and developing a comprehensive plan and zoning ordinance that codifies “managed retreat” as one of the 100 Resilient Cities underwritten by the Rockefeller Foundation. All of Norfolk’s adaptation progress has grown out of strategic maneuvering by local adaptation champions with ties to other powerful adaptation organizations; unsurprisingly, these efforts are largely interconnected. These cities are leaders not of their own accord, but because they have been able to cultivate connections. While this is true of the most advanced leaders such as New York City which overshadows others with its array of adaptation projects, it is absolutely crucial for cities further from the elite tier that consistently benefits from large-scale private investment.

Given this level of contingency, the urban leadership hype publicized by prominent cities and city networks would benefit from some humility. Rather than selling cities as saviors, it would be more honest and instructive to highlight the extent to which cities turn to other levels of government and institutions. Multilevel governance is often seen as a constraint, but it is a constraint that must be navigated. Successfully navigating it, and even deploying it to advantage, is in itself a form of leadership that deserves recognition. Illuminating the ways in which cities do this can be instructive to other cities in cultivating the contingent leadership that will serve them as they strive to achieve adaptation and other urban necessities in an increasingly fractured multilevel context.

6.1.3. Expanded cooperation: implications for planning and practice

Though it might seem like a minor issue, the emergence of expanded cooperation predicated on urban/military planning in both Norfolk and San Diego is a suggestive and promising outcome. In Norfolk, this occurred through simple physical adjacency as well as direction from the Office of Economic Adjustment (OEA) which managed the process. Initially, the OEA proposed a region-wide planning process, but some municipal leaders were concerned their interests would be outweighed by the dominant cities in the region. As a result, the process was divided into three plans, each involving a pair of neighboring municipalities and adjacent installations with the intent that the three plans would ultimately be coordinated. As discussed in the Norfolk chapter, the fact that Norfolk and Virginia Beach collaborated in this process was notable given the history of white flight from Norfolk to Virginia Beach, ensuing annexation controversies and current

\textsuperscript{63} Though this might appear to be a form of urban/military cooperation, it is in fact a civilian endeavor as a large part of the Army Corps’ remit is civilian infrastructure. Though the Army Corps may have some promise as a boundary organization bridging civilian and military interests, currently, that line is legally difficult to cross.
development conflicts. Given the entrenched socioeconomic and racial disparities between the two cities, their cooperation is unexpected. However, under the aegis of the OEA Joint Land Use Study planning process, the two cities have been working toward joint problem definition and solutions. This could create a platform for further cooperation on adaptation which could be significant for the two largest cities in the region, one of which brings more technical and financial capacity, and the other more innovative planning, to the table.

Whereas in Norfolk, it was an unexpected outcome that the two municipalities would work together, in San Diego it was unsurprising that municipalities, already collaborating in multiple adaptation planning processes would work together. However, it was somewhat surprising that they would be further motivated to join a military planning process; they may have been attracted to the prestige of the process as well as the fact that this could be a vehicle for further influence over bayfront adaptation planning. After the Port of San Diego and the Navy signed a Memorandum of Agreement, the bayfront municipalities eagerly engaged in the joint planning process. As a result, there is a more significant, powerful coalition beginning to address adaptation in the San Diego Bay, exceeding the authority and reach of the Port and Navy alone.

For decades, regional planning has been held out as an ideal planning scale, superior to the municipal scale as it is more aligned with natural boundaries and the realities of housing, employment and services. Yet in many cases regional planning tends to hit roadblocks as municipalities fear that local interests will be subsumed; intermunicipal wariness in the Hampton Roads region exemplifies this. Though the intermunicipal cooperation evident through urban/military planning in that region does not ascend to the ideal scale of regional planning, it does represent a step toward larger planning boundaries; it creates a version of the “coalition of the willing” that was often bandied about in the region by those frustrated at the lack of commitment to addressing sea level rise. In San Diego, there are regional forms of adaptation planning, including the consultative Regional Climate Collaborative and the Shoreline Working Group of the Metropolitan Planning Organization, SANDAG which has implementation power. This working group has a history of administering beach nourishment projects and is now turning toward more comprehensive adaptation issues. However, the capacity of each regional group is relatively small. They continuously piece together regional, state, and federal grants to accomplish their adaptation missions; therefore, the bayfront “coalition of the willing” galvanized by Port/Navy cooperation does add additional meaningful capacity.

The fact that expanded cooperation arose under the very different conditions in the two cases suggests that this may be a likely effect of urban/military collaboration, but this would require further investigation. In the case of the OEA process, the push toward regional planning is no coincidence as planners there favor that approach. However, the OEA had no role in the San Diego agreement, suggesting other factors at work. If urban/military collaboration does tend to serve as a seed for further cooperation, this raises additional questions of how it does that, and whether it can largely be attributed to
simple physical adjacency, institutional influences of the federal partner, perceptions of the military, or other institutional effects.

6.1.4. Credible messenger: implications for planning and practice

Urban leaders and climate security proponents describe the military as a “conservative institution,” “not whimsical,” “a trusted messenger,” “apolitical,” “pragmatic,” “clear-eyed” and finally, a “credible messenger.” These descriptions capture a perception of the military as a trustworthy institution, largely above the political fray, which holds for the public and decision-makers toward the conservative end of the political spectrum. For a left-leaning audience, the military may serve as a credible messenger to some extent, but with serious qualifications. That audience would be predisposed to critique the military on any number of fronts: diverting resources from social programs to unjustified foreign intervention to militarization of police forces. However, they may also tend to view military decision-making as being cautious and competent, given the lives and resources at stake. That same left-leaning audience would also be more predisposed to accept the reality of climate change as an ecological crisis, so their endorsement of the military perspective is less important. When security professionals and advocates broadcast military accommodation to the reality of climate change, it provides one way to sidestep this partisan climate quagmire, decoupling climate change from an environmental message. The climate security message in and of itself is not necessarily bipartisan, but it provides conservatives an avenue to join liberals in acknowledging the urgency of climate change.

This strategy was explicit to varying degrees among climate security proponents, but it was almost always present. And it has been useful, convincing various publics and decision-makers to begin to take climate change seriously; for example, a military speaker attracted an unusually large audience to an adaptation forum (Norfolk), the climate security message was wielded to persuade skeptical Port board members to initiate adaptation planning (San Diego), and it was used to initiate discussion with conservative law-makers (DC). In their uniforms, or with simple reference to their office and experience, retired officers, defense professionals, and at times even active duty officers lean on their military status to convey authority and legitimacy in speaking about climate change. When these climate security champions have moved into civilian leadership roles, they have been in the unique position to bridge military and civilian cultures, helping to mobilize the regional adaptation and climate security networks that allow cities to position themselves as leaders. These extended effects indicate that the climate security message has at least as much if not more impact on adaptation outside the military than within, though the two are inextricably linked.

While the climate security approach offers a unique angle, this process of establishing credibility is hardly unique. Several climate security proponents who are committed to the defense angle nonetheless have a broader perspective; they consider it one useful message, along with those related to business, religion, and health, to reach less friendly audiences. All of these sectors could be considered useful “unlikely allies” to engage more people in accepting and addressing climate change. In more critical terms, they could be considered ploys, Trojan Horses for climate credibility on the one hand or co-
option of front-line issues by powerful, protected elites on the other. But the idea that climate change is an environmental issue is increasingly preposterous. Those who have already, sometimes for decades, taken climate change as a matter of fact rather than belief understand that it has the potential to disrupt all aspects of life. Though it will have the first and greatest impact on marginalized populations, it will also compromise powerful institutions. In light of that, the military angle is hardly a duplicitous, “back door” strategy, but a shortcut to understanding climate change as a foundational societal threat. It is still an instrumental approach in that it foregrounds concern with human impacts, but that is the case with most political messages concerning climate change, even those focused on environmental justice. As calls for climate action to match the scale of the problem abound, one way to move toward “all hands on deck” is “all messages on deck.”

One of the greatest risks of this approach remains that while it foregrounds impacts to human settlements, it tends to eschew human causality, making adaptation a priority over mitigation. This is a losing proposition; without a significant decrease in greenhouse gas emissions, moving toward zero, impacts will overwhelm any possible adaptation. Mitigation projects and even ambitious “net zero” initiatives do exist in multiple military branches and climate security champions can and sometimes do leverage these, though it is far more likely in sympathetic political climates, in this case, California rather than Virginia.

6.1.5. Credibility machine: implications for planning and practice

The climate security project acts as a credibility machine, implicitly countering the pervasive manufacture of doubt. The Merchants of Doubt authors and other climate scholars have exposed insidious, successful, industry-funded campaigns to puncture the scientific consensus concerning greenhouse gas emissions (Dunlap & McCright, 2011; Oreskes & Conway, 2010). The credibility machine is not some insidious counterpoint; rather it encapsulates the explicit effort that a different group of experts deploys to reconstruct authority and legitimacy for climate action amidst the distractions of skepticism and competing priorities.

The work of constructing credibility occurred through a multisector, multilevel network. Security professionals, many of whom had previously worked in the Pentagon, first reached out to retired officers to build credibility within the defense establishment; as retired officers became part of the project, together they deployed defense establishment buy-in toward building credibility with a broader audience of policy-makers. Eventually, other climate advocates outside of the defense establishment built on the combined work of these security professionals and retired officers to reach a broader public. Over time, this credibility campaign has developed into a compound process in which increasing credibility in one direction underwrites increasing credibility in others. Much of the product of this hard work is difficult to quantify as the major result has been dialogue and awareness raising. However, it has also resulted in concrete policy achievements, with money already attached or forthcoming.

The climate security project is just one operating within the credibility machine; examining its inner workings reveals the kind of work required to reconstruct belief and
create a foundation for action. Related types of work occur within projects that address climate change as a public health risk, a business risk, or a stewardship imperative. The climate security project also reinforces the widely accepted notion that lack of climate action cannot be attributed to an “information deficit.” While providing information, climate security proponents also deploy a compelling narrative in which the previously invincible military realizes it is vulnerable to climate change and begins to tackle this challenge.

Once again translating into the language of institutional barriers, the climate security project addresses framing and fragmentation. The climate security project deploys the military as a credible messenger and an actor in a compelling climate story. Proponents use this approach to frame climate as a security risk that requires action beyond the defense establishment. Resulting in dialogue, planning and policy, this has been a useful framing. Multilevel networking is integral to the climate security project as it reverberates between specific installations and communities and the larger policy community. In that sense, it overcomes governmental fragmentation informally, stitching together national and local policy to operate more compatibly. While these efforts are somewhat piecemeal, they rely on cultivating a more consistent perspective across levels of government.

To summarize, this research shows that seeking to augment their adaptation capacity, urban leaders form alliances with the U.S. military, a powerful institution with a long-term stake in the local built environment, through reciprocal processes of recognizing interdependence and constructing credibility. Together these processes help to overcome key barriers to adaptation: framing climate action and coordinating implementation across levels of government. This process clearly has wider implications. Interdependence is directly applicable to a wide array of urban collaborations beyond the military case, while the climate security approach to constructing credibility translates to other agendas stemming from particular interests that serve broader adaptation goals as well. It is already apparent that at the very least, the climate security agenda is boosting the case for civilian infrastructure that directly and indirectly serves the military; the shift from serving particular interests to more broadly serving the community could be more direct in non-military cases such as healthcare or business.

6.2 The field of urban climate allies: wider implications and a research agenda

6.2.1. Expanding scope for urban/military collaboration in the U.S.
With events extending throughout the country and a consistent communications effort, the climate security project is gaining traction. And the U.S. defense landscape is more and more primed for this type of advocacy. Extreme weather events, amplified by climate change, increasingly disrupt military operations. In October 2018, Tyndall Air Force Base suffered catastrophic flooding; in the wake of Hurricane Michael, 95 percent of buildings were damaged. In March 2019, extreme rainfall from a “bomb cyclone” overtopped levees on the Missouri River, severely flooding one-third of Offutt Air Force Base. While some installations are more vulnerable than others, it would be hard to find
an installation that will not be impacted by flooding, drought, or wildfires. Defense installations liberally dot the landscape, covering all fifty states. They are rarely isolated in undeveloped land; this means that communities with a stake in defense are also widespread. Some of them have begun adaptation planning, while others are in a position to take advantage of existing policy tools with latent adaptation capacity such as Joint Land Use Studies, Integrated Natural Resource Management Plans and the Readiness and Environmental Protection Initiative. They may also take advantage of emerging policy tools with explicit adaptation resources, including the expanded Defense Access Roads program and the Defense Community Infrastructure Program, which so far represent the concrete policy gains of the climate security project. Civilian leaders in any climate-impacted community could initiate planning and potentially procure resources through at least one of these mechanisms. Just as it is increasingly preposterous to identify climate change as an environmental issue, it is increasingly preposterous to suggest that any communities are immune to climate impacts, so ultimately, these programs could be available to all defense adjacent communities.

6.2.2. The transnational climate security project
While the climate security project is firmly rooted in the U.S. with its immense defense establishment, addressing climate change from a national security angle is not solely an American phenomenon. In some cases, climate security proponents have taken their message travelling, not just to Pennsylvania and Texas, but to the UK, Australia, and the Netherlands. As one of the foremost climate security experts, Sherri Goodman was invited by Australia’s Breakthrough National Centre for Climate Restoration to speak to leaders in business, government, and research about climate change as a threat multiplier (disaster alley). At the 2019 Planetary Security Conference in the Hague, the Center for Climate and Security in concert with French and Dutch counterparts announced the creation of an International Military Council on Climate and Security (IMCCS). This “umbrella network of senior military leaders” will “drive communications and policy in support of actions on the security implications of a changing climate.” (CCS press release) A network formed a decade before that, the Global Military Advisory Council on Climate Change, also continues to promote awareness concerning the security risks of climate change and features some of the retired officers who have been key champions in the American context.

The Planetary Security Initiative, dedicated to catalyzing action in places impacted by climate insecurity, was launched by the Netherlands and operation was subsequently taken over by a consortium of European and American think tanks; outlining a host of UN events that address the nexus of climate and security, they declare that 2019 may be a “tipping point” for the climate security agenda (website, 4/1/19). Ultimately, the climate security project is a transnational project that resonates with global climate elites. Even in places where climate change is a matter of fact rather than belief, the military appears to be a useful “credible messenger” to promote the urgency of climate action. Even in the Netherlands, a global paragon of adaptation, Tom Middendorp, the former Chief of Defense, declared climate change a security threat as a further call to action. As this agenda thrives in other contexts, it raises similar questions to those in the U.S. context: does it enhance adaptation through military/civilian cooperation or other mechanisms,
and if so, what interests do these forms of adaptation linked to the climate security agenda serve?

6.2.3. Potential for local/federal cooperation

Returning to the American context, urban/military collaboration is just one form of local/federal cooperation, though a form defined by certain characteristics. What is of interest here is not just any federal intervention into urban development but federal intervention motivated by a long-term stake in the local built environment. The first key characteristic of the DoD is their long-term physical establishment in communities; the DoD directly develops the built environment over time while also exerting authority over local land use within, and to some extent beyond, the boundaries of the installation. Three additional criteria define urban/military collaboration as an instance of urban/federal cooperation for adaptation: 1. The department/agency has policies and/or plans that address climate change, 2. The department/agency’s mission relates to a political agenda that has been tied to climate change; examples other than climate security include environmental stewardship (DOI) and disaster preparedness (FEMA, HUD). 3. Because of the national footprint, policies and plans are enacted across multiple sites operating in relation to each other.

Applying these criteria, there is wide scope for further understanding the opportunities and challenges of urban/federal collaboration for adaptation. This is a particularly important lens because of the level of resources potentially available when local leaders leverage the federal presence to access federal dollars. One example of immediate relevance is collaboration to address wildfire risk at the wildland/urban interface; communities are already collaborating with federal agencies that have jurisdiction including the Department of Interior and the US Forest Service. Comparing these types of collaborations across impacts and agencies would be instructive in further addressing questions about the extent to which urban “leadership” enrolls soft and hard federal resources.

6.2.4. Anchor institutions as adaptation allies

Focusing on urban adaptation, the concept of the “anchor institution” or “place-based institution” offers the most productive general framework with which to engage the role of the military installation. Organizers of the National Anchor Institution Task Force define them as “entities having a large stake in a city, usually through a combination of internal missions and landownership (Birch, 2016; Birch et al., 2013; Penn Institute for Urban Research, 2010). While these are commonly understood as hospitals and universities, they can also encompass cultural institutions, sports facilities, churches, some large corporations, and military installations. For purposes of analyzing parallels to other institutions, urban/military collaboration can be understood according to the following criteria: 1. A rooted physical presence in urban areas, 2. A national (and international) footprint, 3. Internal climate policy, 4. Association with a political agenda and network surrounding climate change. This last could take many forms ranging from innovation to public health to economic competitiveness.
Brief consideration of the hospital and university parallels is instructive. Hospitals often have an extensive physical presence within a city; their physical plant dominates multiple blocks while the economic impact of the constant traffic of staff and patients noticeably extends into the surrounding neighborhood, and often to the region. As hospital systems consolidate, they increasingly become multi-state and even national organizations. After sustaining impacts from multiple major disasters, hospitals have increasingly invested in short-term disaster response, buttressing building codes and operational standards, while also beginning to address long-term continuity. Crucially, this is related to a larger public health agenda to address climate change embodied in organizations such as Health Care Without Harm which recently co-produced a report on “Climate-Smart Healthcare.” Similarly, universities have an obvious and impactful physical presence, often long-established within and beyond campus walls.

Responding to pressure from students and faculty, universities have frequently adopted a sustainability leadership mantle, attempting to be proactive about internal climate policy. While universities are more decentralized in terms of their actual governance than hospitals and military installations, they tend to form part of larger climate networks, both tied directly to higher education and beyond. For example, the Association for the Advancement of Sustainability in Higher Education has over 900 members, and colleges and universities comprise 348 members of the We Are Still In network.

Examining these anchor institutions as potential adaptation allies to communities would help to further understand the core issues of interdependence and credibility that emerged here. For example, the historically fraught town/gown relationship immediately raises similar questions regarding interdependence versus islanding. While campus walls may legally be easier to breach, they often represent a stark political and economic divide with the surrounding community. Nevertheless, the pressure of climate impacts and political pressure from both sides of the wall may increasingly force recognition of interdependence.

In an era of fake news when expert knowledge is increasingly suspect and science is regularly undermined, credibility remains an open question. In that atmosphere, universities are likely less credible messengers than the defense or healthcare establishments, though as always, it depends on the audience. As urban leaders turn to a proliferating array of potential climate allies, it is critical to understand how those allies might be enlisted and to what ends. Recognizing interdependence and constructing credibility help surmount core barriers to adaptation offering a promising pathway to more robust climate alliances.

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64 We Are Still In is a network of businesses, cities, states, universities, cultural institutions, health care organizations, faith groups, states and tribes dedicated to fulfilling the U.S. commitment to the Paris Agreement in spite of federal withdrawal.
## APPENDIX 1: List of Interviews

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<td>James Balocki</td>
<td>Deputy Assistant Secretary of the Navy, Installations and Facilities</td>
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<td>Sharon Burke</td>
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<td>Sherri Goodman</td>
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REFERENCES


AECOM. (2017a). *Norfolk / Virginia Beach JLUS Technical Committee Mtg 2 Notes*.

AECOM. (2017b). *Norfolk / Virginia Beach JLUS Technical Committee Mtg 3 Notes*.

AECOM. (2018a). *Norfolk / Virginia Beach JLUS Technical Committee Mtg 4 Notes*.


Atkinson, L. P. (2011). *Old Dominion University Climate Change and Sea Level Rise Initiative Summer Update*.


Bergengruen, V. (2017, June 28). Pentagon, Trump are at odds on climate change -- and Democrats are taking advantage. *McClatchy*.


California Coastal Commission. (2014). *Addendum to CD-0003-14 -- Naval Base Coronado Coastal Campus Project, W16a*.


209


CNA Military Advisory Board. (2014). *National Security and the Accelerating Risks of Climate Change.* Alexandria, VA.


Dalby, S. (2009). *Security and environmental change.* Cambridge UK ;;Malden MA:


Penn Institute for Urban Research. (2010). *Anchor Institutions and their Role in Metropolitan Change*.


Climate Change, 8(9), 754–756. https://doi.org/10.1038/s41558-018-0264-0
Skelton, A. (2017, April 28). “Eventually, Seatack will be gone”: Residents worry historic black community in Virginia Beach is disappearing. The Virginian-Pilot.


The Economist. (2018, February 22). One arm of the Trump administration thinks climate change is a security threat. The Economist.


