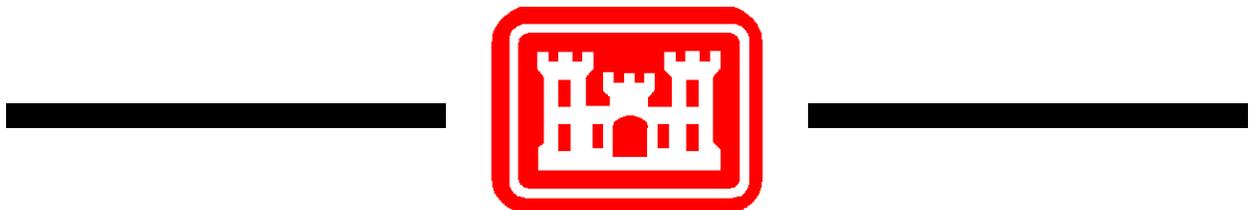


PUBLIC WORKS TECHNICAL BULLETIN 200-1-96
18 MAY 2011

**INITIATING REGIONAL SMART-GROWTH
STRATEGIES**



Public Works Technical Bulletins are published by the U.S. Army Corps of Engineers, Washington, DC. They are intended to provide information on specific topics in areas of Facilities Engineering and Public Works. They are not intended to establish new Department of Army (DA) policy.

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Public Works Technical Bulletin

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No. 200-1-96

FACILITIES ENGINEERING
ENVIRONMENTAL
INITIATING REGIONAL SMART-GROWTH
STRATEGIES

1. Purpose.

a. This Public Works Technical Bulletin (PWTB) facilitates collaboration between Army installation personnel and non-military regional stakeholders to promote smart-growth strategies. It can assist the Department of Army in achieving the goal outlined in Executive Order 13514 to satisfy mission requirements while maintaining a safe, healthy, and high quality environment for current and future generations.

b. All PWTBs are available electronically in Adobe® Acrobat® portable document format [PDF]) through the World Wide Web (WWW) at the National Institute of Building Sciences' Whole Building Design Guide (WBDG) Web page, which is accessible through this Universal Resource Locator (URL):

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215

2. Applicability. This PWTB applies to all U.S. Army facilities engineering activities in the Continental United States (CONUS).

3. References.

a. Executive Order (EO) 13514: Federal Leadership in Environmental, Energy, and Economic Performance, October 2009. The EO establishes an integrated strategy towards sustainability

18 May 2011

in the Federal Government and to make reductions of greenhouse gas emissions a priority for Federal agencies.

b. Army Regulation (AR) 210-20, *Real Property Master Planning for Army Installations*, 2005, U.S. Army, Washington, DC. This AR establishes and prescribes the Army's real property master planning process.

c. U.S Army Sustainability, 2005, *Army Installation Sustainability Planning Guide* provides detailed information and lessons learned to facilitate installation sustainability planning. Available at the following URL:
http://www.sustainability.army.mil/tools/programtools_guide.cfm.

d. *Army Strategy for the Environment: Sustain the Mission, Secure the Future*, 2004, U.S. Army, Washington, DC. The strategy creates a long-range vision of incorporating environmental considerations into all military operations.

e. *The Feasibility Study for Implementing Sustainable Development Concepts and Principles into the Army, Navy, Air Force, and Marine Corps Land and Facilities Planning Processes and Programs or Sustainable Planning: A Multi-Service Assessment*, 1999, Office of the Secretary of Defense, Washington, DC. This document examines policy to achieve optimum resource efficiency and constructability while minimizing adverse impacts to the built and natural environments through all phases of its life cycle.

4. Discussion.

a. Smart-growth planning values long-range, regional considerations of sustainability. Its goals are: (a) to achieve a unique sense of community and place; (b) expand the range of transportation, employment, and housing choices; (c) equitably distribute the costs and benefits of development; (d) preserve and enhance natural and cultural resources; and (e) promote public health. Generally, the principles of smart growth are widely acceptable ideas about the desirable form and character of communities. The Army has committed to smart-growth principles. This concern is particularly important for our national defense posture and the planning and development of our installations. It is highly unlikely that the United States will be able to acquire major acreage to build new installations to support changing mission requirements. Thus, installations' infrastructure – land and facilities – will be the infrastructure that supports future generations.

18 May 2011

b. The ideals set forth in *The Army Strategy for the Environment: Sustain the Mission - Secure the Future* are the keys to spurring the Army's smart-growth movement. The strategy identifies that poor planning and poor use of resources can adversely impact the economic viability of local communities, human and ecosystem health, and the sustainability of the Army mission. Since the military does not want to jeopardize land used for vital training, smart-growth principles are now imbedded into Army master planning. As per AR 210-20, Real Property Master Planning for Army Installations:

- All planning and development of installations shall consider regional planning factors.
- Garrisons will coordinate installation master plans within the intergovernmental planning process as implemented by Installation Management Command (IMCOM).
- All installation master plans will be coordinated with communities surrounding the installation to: (1) minimize impacts of installation operations and development or Base Realignment and Closure (BRAC) actions on those installations; (2) maintain awareness of and respect for the future growth patterns and development of the surrounding communities; and (3) seek mutual compatible land uses and zoning considerations to maintain the operational capability and future viability of the installation.

c. Smart growth is embraced by installations, but to be successful, smart growth needs to be embraced regionally. Appendix A gives an overview of the role of smart growth and master planning at Army installations. It then sets the stage for accomplishing smart-growth strategies on a regional scale.

d. Appendix B provides best practices for integrating regional smart growth. This includes an eight-step process to engage regional stakeholders in moving forward toward incorporating regional considerations within their master plans. The steps were developed from literature, expert review, and case study experiences. They are a starting point for introducing regional standards that allow for smart growth.

e. Appendix C provides available resources and implementation recommendations.

f. Appendix D lists the acronyms and abbreviations used in this PWTB.

18 May 2011

g. Appendix E cites the expert review and literature consulted for this publication.

5. Points of Contact.

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b. The HQUSACE proponent for master planning is Mr. Jerry Zekert, CEMP-CI-P, 202-761-7525, email: Jerry.C.Zekert@usace.army.mil.

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Appendix A

Installation Master Planning and Smart Growth

Installation master planning is a process that creates a long-range vision for installation development. It is first a collaborative process that brings together stakeholders, but also it is a holistic process that ensures many considerations are integrated into a comprehensive plan. These considerations can include, but are not limited to: (a) mission requirements, (b) environmental stewardship, (c) planning and health, (d) sustainable planning (including smart growth), (e) anti-terrorism and force protection, (f) historical preservation, and (g) natural and cultural resource management.

To be effective, installation planning requires a broad perspective. Not only must the process planner consider various factors but also a planner must consider these factors at different scales. From a broad regional viewpoint to the most finite individual project site, a comprehensive planning process must be the goal to ensure success in achieving the development goals of the installation. For an installation to achieve the principles of smart growth, it is imperative that the principles be integrated into the installation planning process. This appendix describes the Army planning process – beginning with its fundamental principles – and how smart growth is integrated into the process.

Fundamental Army Planning Principles

While many factors influence the planning and development of an installation, the Army's ten principles of planning are the key to Army master planning and the paradigms under which master plans are developed. These tenets, defined in AR 210-20, are as follows.

1. Form-Based Coding
2. Area Development Planning
3. Sustainable Development
4. Sustainable Building Design
5. Natural and Cultural Resource Preservation
6. Planning for Healthy Communities
7. Critical Infrastructure Risk Management (CIRM)
8. Anti-Terrorism/Force Protection Planning (AT/FP)
9. Facility Standardization
10. Spatial Data Management

18 May 2011

Each planning principle is described in detail below.

Form-Based Coding

Form-based codes foster predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the code. Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. The regulations and standards in form-based codes, presented in both diagrams and words, reflect mission needs, program requirements, environmental constraints and opportunities, and other development factors. Form-based coding emphasizes spatial principles that support sustainable, smart development by making building form and character the most important factor and building use secondary.

Area Development Planning

As part of the framework plan, installations shall be divided into identifiable districts based on geographical features, land use patterns, building types, and/or transportation networks. An optional (but recommended) Area Development Plan (ADP) may be prepared for each district. This leads to developing the installation master plan in logical planning increments. The number of ADPs is determined by the installation planner. Each ADP may have a supplementary planning vision statement if necessary because of unique factors for the development of that district. When combined, the installation's ADPs and overarching transportation, open space, and utility plans become the Installation Development Plan.

By focusing on districts, planners can identify areas that need planning attention due to mission, requirement, or command priority changes. These are the districts that should have new ADPs completed or existing ADPs updated. This incremental approach to updating the master plan recognizes the resource limitations and district development priorities that are common across all installations.

Sustainable Development

The concepts and principles of sustainable development promote the conduct of installation missions in an environmentally, economically, and fiscally sound manner. As outlined in Executive Order 13423, the goal is to satisfy mission

18 May 2011

requirements while maintaining a safe, healthy, and high quality environment for current and future generations. Sustainable development leads to "lasting" development - meeting present requirements without compromising the ability of future generations to meet their needs. Key principles of sustainable development include compact development, infill development, mixed uses, connected transportation networks, appropriate landscaping, low-impact development, and renewable energy.

Sustainable Building Design

It is Department of Defense (DoD) policy to design and build facilities that are energy efficient and environmentally sustainable. All new Army buildings will implement the design standards of the Energy Policy Act of 2005 and Energy Independence and Security Act of 2007 and must be able to achieve the current Army-designated U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) certification.

Natural and Cultural Resource Preservation

All installations have natural and cultural resources that may deserve special protection. Natural resources can include threatened and endangered species, wetlands, habitat areas, forests, undisturbed land, and important viewsheds (areas of land, water, or other environmental element that are visible to the human eye from a fixed vantage point). Cultural resources may include historic structures, cultural landscapes, and heritage monuments. The planner shall coordinate planning decisions with installation cultural and natural resource managers to ensure protection of these resources.

Planning for Healthy Communities

Regular physical activity is critically important for the health and well-being of people of all ages, and effective planning can create conditions that encourage physical activity. For example, high connectivity, mixed land uses, and well-designed pedestrian and bicycle infrastructure decrease auto dependence and increase levels of walking and cycling. Master planners shall incorporate health considerations and opportunities for physical activity based on advice from representatives from the installation's medical staff. When feasible, planners shall include installation health representatives in visioning sessions and ADP charrettes.

18 May 2011

Critical Infrastructure Risk Management

Part of the Defense Critical Infrastructure Program (DCIP), CIRM is a capability-focused risk management program that seeks to manage risk to installation assets and infrastructure-enabling mission success by aiding commanders in both deliberate and adaptive planning, as well as strategic risk management. Installations perform a CIRM analysis to minimize risk to the installation's strategic infrastructure and networked assets that support the critical missions necessary to provide combat capabilities. Where risk exists, the plan must have contingencies to mitigate or remediate the risk. Critical infrastructure may include both on-post assets and off-post assets such as buildings, bridges, dams, facilities, and utility and transportation systems essential to planning, mobilizing, deploying, executing, and sustaining U.S. military operations. Assets become critical as dependencies upon them to support missions become critical (i.e., without the assets the mission(s) will fail).

Anti-Terrorism/Force Protection Planning

Planners incorporate AT/FP elements to ensure installation protection from terrorist activities. Unified Facilities Criteria (UFC) 4-101-01 provides specific criteria in managing AT/FP risk. To minimize sprawl and encourage sustainable design, three key lessons from the crime prevention field (natural surveillance, territorial reinforcement, and natural access control) are incorporated into AT/FP design.

Facility Standardization

The Army is creating common standards and criteria for many facilities. Some common facility types that have been standardized include dining facilities, barracks, and brigade complexes (including battalion headquarters facilities, company operations facilities, and tactical equipment maintenance facilities). Army standards (in accordance with AR 420-1: Army Facilities Management) establish the mandatory functional and/or operational requirements and spatial relationships that must be met by each facility of a specified type or complex. These standards are developed by the Facility Design Team co-chaired by the Army Staff Functional Proponent and Office of the Chief of Staff for Installation Management for a facility type or complex.

Spatial Data Management

Spatial data are required in order to perform functions within master planning. Much of these data is created by other functional areas and accessed by the installation master planner, to include data documenting the installation regional physiographic, demographic, and political settings. Spatial data collected and/or created must adhere to common standards; must follow the Spatial Data Standard for Facilities, Infrastructure, and Environment; and must be documented with metadata according to the Federal Geographic Data Committee standards and Executive Order 12906, as amended by Executive Order 13286. Spatial data and applications developed and used by the installation planner must also be shared and integrated within the DoD in accordance with Army guidance.

To create a great installation community for today and future generations, it is imperative for today's planners to focus on these guiding principles. However, the question remains, how does planning work? The next section describes the installation master planning process.

Army Planning Process

Planning is a process not a product. No matter what level of planning occurs, the process must be collaborative, holistic, and promote broad participation by stakeholders. Further, the process must consider the Army planning tenets. Any planning process at any level must go through the following steps.

Step 1: Establish a vision and develop a set of planning principles.

The vision is a statement of intent as to where the installation will be in regard to its development in the far future. It is not a mission statement but a concise statement of principles. The vision statement is developed in collaboration, with broad stakeholder participation. Further, this process involves defining a set of planning principles that implement the vision. The stakeholders build these principles that will guide development patterns.

Step 2: Establish and understand the baseline information.

This step includes understanding the various conditions of the planning area to include natural and cultural resources, environmental issues, built environment, mission requirements,

18 May 2011

etc. It is more than just inventorying land use categories. It includes defining the characteristics (or criteria) by which the land is evaluated.

Step 3: Formulate and define a set of alternatives to resolve the planning problem.

This step involves collaboratively considering different strategies and options that will enable the installation to meet its identified goals.

Step 4: Evaluate the set of alternatives and select the preferred alternative.

In this activity, the group will select the preferred solution to resolve the planning problem. The metrics to evaluate the alternatives are the planning principles set forth in Step 1, which is why the vision must be comprehensive and consider all factors.

Step 5: Obtain leadership approval.

The planning group must have leadership approval. In the approval process, the team presents the alternatives, the metrics from which they were evaluated, and the recommendations.

Step 6: Implement the plan.

Implementation includes such activities as programming of new projects and establishing regional Memorandums of Agreement (MOAs).

The six steps just outlined will result in the Army's Real Property Master Plan (RPMP). The RPMP documents the broad community vision and direction for installation development. This includes identifying all the planning principles that will be adopted (which includes smart growth) and the strategy to implement them. The current structure of the RPMP plan represents a comprehensive set of documents that portray the master plan. Figure 1 shows the critical and optional RPMP components, which document the intent at various echelons. The five components are described below.

- The Real Property Master Planning Digest documents the vision goals and objectives for installation development. It also documents the process of installation capabilities and buildable areas through a comprehensive analysis of

18 May 2011

constraints and opportunities. The Digest contains the guiding principles for all planning on the installation.

- The Long Range Component documents the long-range development patterns for the installation based on the planning principles. Specific documents include the Land Use Plan, Infrastructure Plans, and regional planning initiatives. Installation ADPs are optional to the long-range components.
- The Installation Design Guide (IDG) documents and sets the built environment standards that all community development must follow. It should be noted that standards are built from the planning process, not in isolation.
- The Capital Investment Strategy (CIS) provides the implementation actions needed to achieve the plan. Here, the tabulation of existing and required facilities is completed. CIS documents the comprehensive set of actions needed to complete the plan. These actions are identified in the ADPs and other planning documents.
- The Short Range Component is basically a subset of the of the CIS and documents the projects that are in the seven year DoD budget.

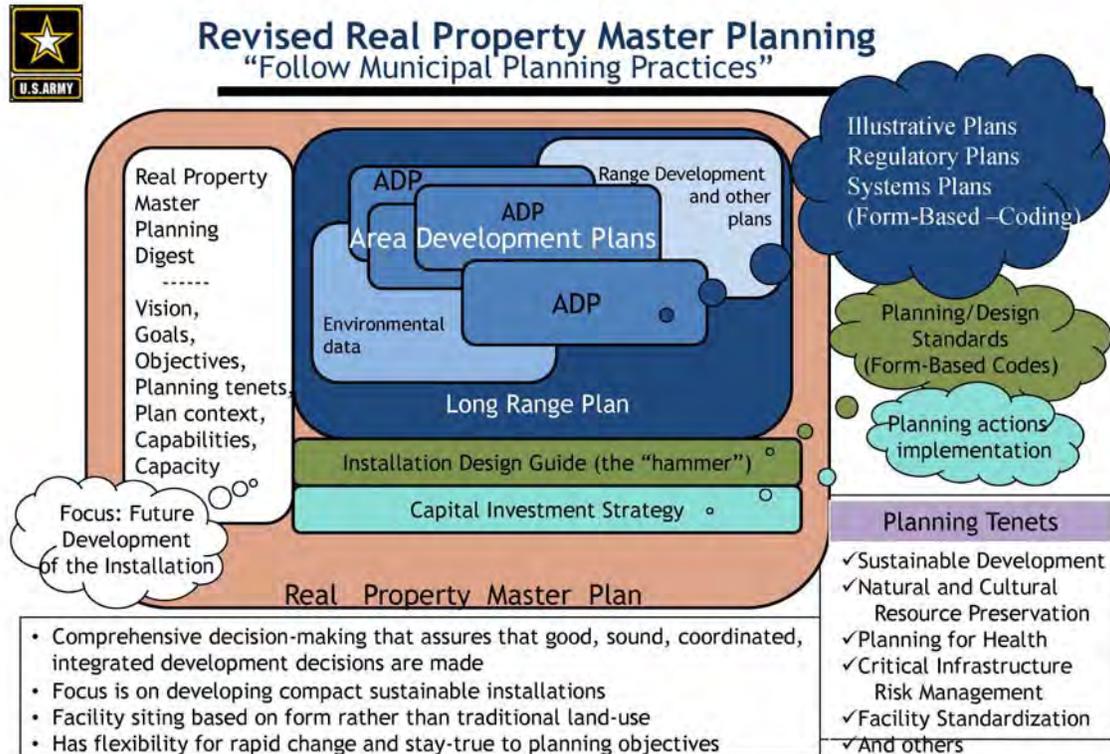


Figure 1. Installation Master Plan components.

Integrating Smart-Growth Principles

Why is knowledge of these documents and the planning process important to implementing a smart-growth policy? Smart growth is a technique for achieving sustainable development principles. They are stated principles set forth in planning tenets and local planning visions, goals, and objectives. For example, smart-growth principles must be succinctly documented in the Digest; long-range component plans must document the smart-growth patterns cited in the principles; the IDG must cite the built environment standards; the CIS projects that are identified and the short-range component programmed projects must be documented, programmed, and formulated from the planning process that is smart-growth driven.

Regional Development Strategy

The Army recognizes that development threats come from external as well as internal activities. Changes in land-use patterns near or far from installations can increase citizen complaints due to noise, dust, radio, and frequency interference. It can

18 May 2011

generate night sky glow that interferes with military night-vision training and testing. And, it can decrease natural habitats required by sensitive species resulting in military installations housing the only remnant populations and putting pressure on the installations to decrease training/testing time and locations to protect these populations. The record shows that some neighboring communities are still making counterproductive development decisions while others are making smarter development choices. Yet, there has been little discussion about regionally smart outcomes. To extend smart growth to multicounty regions means that natural systems must be understood at a regional scale and regional transportation systems such as highways, trains, and mass transit must create a framework for compact development. This extension requires understanding of interrelated systems and having strong, regional engagement and cooperation.

Understanding those interrelated systems is no easy task. An overwhelming number of issues are being addressed and projects being undertaken. The potential exists for regional initiatives to fall apart because of their sheer size and complexity, yet many aspects of smart growth (e.g., integrated transportation and land-use planning, the conservation of sustainable open space, and the attainment of a jobs/housing balance) are most logically approached from a regional perspective.

Embracing the principles of regional planning has been stated in Army comprehensive planning practices, principles, and policies, and synopsized in this appendix. The methodology is in place to implement regional smart-growth plans. Moreover, many installations have already been achieving successes in regional planning and smart growth. Appendix B highlights some of the best practices and lessons learned from case studies and literature. Appendix C provides additional training and reading resources on planning and smart growth.

Appendix B

Regional Smart-Growth Best Practices

As in most things related to planning, there is no right answer. Planners and communities must follow the path that best meets their needs and tailor their approach to the specific issues and characteristics of their community. However, there are several organizations that help implement great planning and smart growth. Several of them are listed below.

Organizations Assisting with Smart Growth

IMCOM Sustainability and Emerging Technologies

In February 2009, Headquarters IMCOM chartered the Center for Future Installation Strategies, Sustainability and Emerging Technologies Branch, which is now known as the G5 Plans' Strategic Planning Division (SPD). The SPD is responsible for integrating sustainability throughout the IMCOM enterprise. Simply put, SPD will integrate a sustainability mindset in all aspects of installation operations, including smart growth. SPD anticipates release of execution guidance by 2011.

Office of Economic Adjustment

The Office of Economic Adjustment (OEA) and the Army Environmental Command are contributors in supporting effective community-wide plans. The Joint Land Use Study Program (1985), the Army Compatible Use Buffer Program (2001), and the Sustainable Range Program (2005) are three examples of their efforts. Launched last year (June 2009) is the Sustainable Communities Initiative – an interagency cooperation among the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency (EPA). This partnership supports communities in coordinating housing, transportation, and other infrastructure investments to protect the environment and promote equitable development.

Installation Sustainability Planning (ISP) Initiative

IMCOM has championed the ISP Initiative to jump start sustainability on Army installations. This ISP effort works to build trust and respect across traditional political, social, and economic divides to achieve collaboratively established

18 May 2011

sustainability goals. At least 17 installations have now undergone the ISP process.

One of the best off-shoots of the ISP process is the Sustainable Sandhills initiative within the Fort Bragg region; it demonstrates high qualities for regional leadership. Sustainable Sandhills, <http://www.sustainablesandhills.org>, is a non-profit organization working together with Fort Bragg and the North Carolina Department of Environment and Natural Resources toward a shared vision of regional sustainability. The Sustainable Sandhills region encompasses eight counties in southeastern North Carolina, as well as the military installations at Fort Bragg, Pope Air Force Base, and Camp Mackall.

Eight Steps toward Regional Smart Growth

Gleaned from the preceding organizations and emerging literature are eight steps to putting regional smart growth into practice. The intent is to create a starting point and provide steps for regions to begin moving toward incorporating regional considerations within their master plans. Implementation will require modification to reflect local circumstances; however, it is a protocol within which to consider key aspects involved in an organized and interrelated way. The steps are an accumulation of literature, expert review, and case study experiences. They are a summation of best practices and lessons learned. Some people will find that this guidance says too little. The goal was not to catalog all aspects of good development practices, but rather to emphasize those that need attention. Most of the items in this bulletin would benefit from longer discussion than is offered. It is a starting point. Append these steps with existing local tools and resources, and use them to introduce regional standards that allow smart growth.

Steps 1-3: Addressing Natural Areas.

Step 1: *Map the Greenprint – identify the region’s cumulative natural resources.*

Championed by the National Land Trust, Greenprint is a method for mapping an area’s natural resources to guide growth. Greenprint areas are not necessarily protected by law, they need only have value to be considered in planning decisions. The National Land Trust’s publication, *Growing Greener: Conservation by Design* (2001), lists nine elements to be mapped:

- wetlands and their buffers

18 May 2011

- floodways and floodplains
- moderate and steep slopes
- aquifer recharge areas
- woodlands
- productive farmland
- significant wildlife habitats
- historic, archeological, and cultural features
- scenic viewsheds from public roads

Step 2: *Map the Natural Preserve; identify the land truly protected from development.*

The Natural Preserve consists of those portions of the Greenprint that are prohibited by law or contract from future development. These protected lands establish the core open-space resource. As stated by the Urban Land Institute, "smart growth recognizes the intrinsic community, economic, and environmental value of open spaces in all communities" (Porter 2002). It is important to understand the public worth of open space.

Step 3: *Map the Natural Reserve; identify additional land that should be protected.*

The Natural Reserve combines the Greenprint and Natural Preserve to fulfill the natural areas plan for the region. A first step in creating the Natural Reserve is to review critically the Greenprint already completed. Identify the features, such as moderate slopes, that may not be reasonably defensible as valuable open space. Next, identify supplemental land to create a continuous system of natural corridors. Once it is mapped as an infrastructure system, the Natural Reserve clearly indicates the region's highest-priority areas for open-space protection. All future efforts for land preservation, whether ballot measures, purchase by benevolent organizations, or transferred-development-rights programs, should focus on shifting land from the vulnerable Natural Reserve into the permanently protected Natural Preserve.

Suggested Actions for Natural Area Considerations

- Regional Geographic Information System (GIS) Repository: establish a collective set of regional GIS layers. Municipalities and installations often have an extensive set of GIS layers for their jurisdiction but lack basic knowledge about their neighbors.

18 May 2011

- **Land Suitability Modeling:** establish evaluation criteria for the suitability of land uses. Siting of a new school should not solely be determined by the cost of land. Rather it should include bus route distances, adjacent land uses, and environmental considerations. Ensuring decisions consider a variety of factors can ensure land remains available for the highest and best use.
- **Land-use Projection Modeling:** identify stressed areas. Some areas are more likely to experience growth than others. Despite being a critical natural area to preserve, if development pressures are low, an area may not be a high priority for preservation efforts. Make the best use of limited resources.
- **Assistance Programs:** make use of additional funding sources. Local voters often tax themselves to buy land to add to the public domain and to buy development rights on private land. A number of federal and Department of Defense (DoD) programs also offer assistance. These include the: Farmland Preservation Program; Forest Legacy Program; Wetlands Reserve Program; Land and Water Conservation Fund; Army Compatible Use Buffer Program; Encroachment Partnering Program; and Readiness and Environmental Protection Initiative.

Step 4: Addressing Urban Development

Step 4: *Map the Development Priorities; identify areas best suited for growth.*

The principles of smart growth strive to avoid sites with environmental characteristics that make them unsuited for development. This hierarchy should appear as prioritized development sectors on the regional map. The Smart Growth Manual (Duany 2010) describes these sectors as follows:

- **Intended Growth Sectors:** high-priority areas of urban infill, brownfield sites, and transit stops;
- **Controlled Growth Sectors:** moderate-priority areas of urban extension and suburban infill;
- **Restricted Growth Sectors:** low-priority areas of suburban extension and new development on existing infrastructure; and

18 May 2011

- **No-Growth Sectors:** areas of development requiring new infrastructure or in environmentally sensitive locations

Once these sectors have been mapped, governments at every level can use incentives and coordinate policies to prioritize development.

Suggested Actions for Urban Development Considerations

- **Growth Projections** – estimate future population. Forecast the number of people who are likely to live and work within the region in the next 20 years, and understand how that number fits into the growth sectors. Charrettes are one technique of participatory planning that help stakeholders understand and create a plan to accommodate growth in a way that maximizes benefits and minimizes negative consequences.
- **Land-use Projection Models** – spatially allocate future development. Computer-based tools can simulate land-use change across space and time to produce a visualization of where future growth is likely to occur. The development future is determined by local assumptions, allowing scenario analysis. Planners may begin to understand the impacts of limiting development from one area by modeling whether the intended populations evenly disperse within the existing development or shift to develop in a new location.
- **Existing Partnerships** – identify and engage existing partnerships. Many state and multi-state partnerships are engaged in conservation planning and smart growth. These organizations can contribute greatly to regional efforts.

Steps 5-8: Addressing Transportation

Step 5: *Map the Regional Nodes; identify regional and neighborhood centers.*

Determining regional nodes is the first step to fulfilling a regional transit plan. Examining the urban structure of regional centers, neighborhoods, and districts enables effective transportation decisions. Planners can then identify where populations frequently come together.

Step 6: *Map the Corridors – identify natural and man-made corridors.*

18 May 2011

Corridors are the linear elements that not only connect but also separate regional nodes. Corridors can be natural or manmade. They include waterways, greenways, rail lines, and major traffic thoroughfares. Plans should nourish current corridors, transition decaying ones, and record future ones so that the necessary land can be acquired. Military security and access restriction often make connectivity challenging for installation planners. It is important to ensure that local and regional transportation systems effectively link into on-base systems in order to minimize gate congestion.

Step 7: *Create Mode Choice: provide the contextually appropriate mode of transit.*

Do not prioritize the automobile above all other modes of transport. Communities have a variety of rail, bus, and pedestrian options. In considering different systems, it is important to understand what distinguishes them. The American Planning Association (APA 2010) offers the following considerations.

- Accessibility
- Speed
- Capacity
- Environmental Impact (i.e., carbon footprint)
- Aesthetics
- Economic Costs

Step 8: *Map the Transit Region: plan transportation comprehensively at the regional scale.*

The compilation of Steps 5, 6, and 7 result in a transportation plan for region-wide service. Determining and connecting employment and activity centers is a difficult task. However, this investment will pay off as residents spend less and less of their income and time getting around.

Suggested Actions for Transportation Considerations

- Metropolitan Planning Organization (MPO) – identify and engage existing organizations. MPOs can contribute greatly

18 May 2011

to regional efforts. The 1962 Federal-Aid Highway Act required MPOs to establish a Regional Transportation Plan for any urban area with a population greater than 50,000. Federal funding for transportation projects and programs are also channeled through the MPO.

- Performance Measures – demonstrate how well the transportation system is doing its job. Many states and metropolitan areas use performance measures to monitor how close they are to achieving specific goals, such as accessibility to key regional population, employment, cultural, and recreational centers, the mobility of disadvantaged populations, levels of air quality, and the health of the economy. Some measures used include tracking average speeds and crash rates.
- Technology Applications – integrate transportation models with existing tools. A variety of methods, models, and tools are likely utilized currently to tackle land use, community development, economic development, and environmental protection challenges. Encourage successful community design and informed decision-making by integrating these with transportation models.
- Community Visioning – engage stakeholders in future visioning. Propose questions such as: "In a post-petroleum economy, what will be valuable?"
- Land Use/Transportation Linkages – optimize the relationship between land use and transportation. Literature abounds on the transportation/land-use connection. Still municipal engineers routinely plan new roadway extensions into areas that municipal planners are trying to keep free of development, while planners allow new development without considering its transportation needs. Land-use and transportation decisions should be made simultaneously.

Appendix C

Resources to Become a Smart-Growth Region

This appendix is an inventory of some of the best resources to initiate a regional smart-growth program. It provides sources for resources, training, and additional best practices.

Education and Training

The Army has established an extensive training program that teaches planning practices to help reach smart-growth aspirations. This community of practice has been certified by APA and includes courses that are broad in nature and applied universally to all the services within Department of Defense (DoD), as well as local cities, counties, and towns. These courses are provided by the U.S. Army Corps of Engineers (USACE) Learning Center, Huntsville, Alabama through the Proponent-Sponsored Engineer Corps Training (PROSPECT) program or hosted by the Headquarters USACE Planning Team and are open to all DoD and federal agencies as well as the general public. These courses are listed below. Those interested in PROSPECT courses should visit online at: <http://pdsc.usace.army.mil/>.

Level 1: Planning Overview

Course 75 Real Property Master Planning: (PROSPECT) This 36-hour course provides attendees with a broad overview of planning and its principles and practices, including smart growth. The course is conducted in American cities notable for their sustainable planning. The class involves lectures, group exercises, and field trips through these cities to observe planning principles in action.

Master Planning Workshops: These 1-day workshops are educational opportunities for general installation stakeholders that need to understand the principles of planning. It is crafted for senior executives, middle management, and others interested in planning roles. Participants learn the principles of planning (to include visioning, planning patterns, smart growth, sustainable development, etc.) and then participate in a 4-hour collaborative planning exercise to apply their knowledge to a group planning exercise.

Level 2: Immediate Planning Practices

Course 952 Advanced Master Planning: (PROSPECT) This 36-hour course provides attendees a unique learning opportunity to learn in a design studio environment the fundamentals of great planning, including identifying and establishing planning patterns, great streets, smart growth and sustainable development, visioning, area development planning, impacts on international relationships, natural and cultural preservation, and anti-terrorism and force protection considerations.

Level 3: Planning Specialties

Course 948 Master Planning Visualization Techniques: (PROSPECT) The practice of planning involves many planning patterns and techniques that stakeholders cannot visualize. It is imperative that planners obtain the skills necessary to translate these principles into visualization images that all can see. This class teaches students to use Adobe Photoshop® and Google Sketch-up® to develop two- and three-dimensional renderings of planning maps, area development plans, and facility development plans. Each student gets hands-on training in these applications and, through the exercises, uses these applications to develop planning products that stakeholders can visualize.

Course 326 Master Planning Applied Skills: (PROSPECT) This course provides the details on how to define facility requirements. Students learn how to analyze population demographics and unit strengths using tools such as the Army Stationing Installation Plan and the Real Property Planning Analysis System (RPLANS) to build requirements.

Level 4: Master Planning

Master Planning Practicums: USACE hosts a series of installation planning practicums where personnel from entire installations learn to empower themselves to engage and participate in the installation planning program. Through a series of applied instruction initiatives, installations are brought together in a collaborative, holistic environment to produce their plan. Practicums include:

- Visioning, Framework Plan and Installation Development Guide Practicum
- Area Development Planning Practicum

18 May 2011

- Installation Development Plan Practicum
- Real Property Master Plan Digest Practicum

Those interested in hosting a planning practicum should contact Jerry Zekert, Chief Planning Team, HQ USACE, 202-761-7525, email Jerry.C.Zekert@usace.army.mil.

Army Master Planning Symposium: For more than 15 years, USACE has hosted the annual Army Master Planning Symposium in conjunction with the APA and Federal Planning Division Workshop. This 2-day symposium brings the entire Army planning community together to discuss best business practices within the Army as well as other armed services and federal agencies. Contact Jerry Zekert at 202-761-7525 or email him at Jerry.C.Zekert@usace.army.mil for further information. For information on upcoming symposiums, visit APA online at: <http://www.planning.org>.

Websites

Many resources are available for planners to obtain more information with regard to achieving smart growth and particularly for regional planning. Specifically, three primary websites can serve as resources for Army planning and smart growth.

- Master Planning Community of Practice [<http://www.baseplanningpractices.net>] supports the broad, general planning community with resources, planning practices blog site, and calendar with regard to Army planning activities.
- Army Master Planning Policy [<https://www.us.army.mil/suite/page/528504>] provides the compendium on Army master planning policy. It is operated within Army Knowledge On-line and has limited access outside the Army and DoD.
- Army Master Planning Implementation [<https://eko.usace.army.mil/fa/arpmp/>] provides detailed practices, implementation guidance, and best practices. It is operated by Installation Management Command within Engineer Knowledge On-line and has limited access outside of the Army and DoD.

Recommendations

Though techniques will vary across regions and community types, generally, the best practices listed in Appendix B can be the basis for a sensible and effective regional smart-growth plan. The resources embody the combined advice from the latest literature and professionals working in the smart-growth field. For those installations looking for a next step or starting point, these resources offer practical explanations of what to do. It is important to keep in mind that smart growth is a process, not an end-state. It is a process of continuous, ongoing improvement and a realignment of community goals and practices to grow in a more responsible and resilient manner. The critical factor that Appendix B aims to foster is collaboration, focusing everyone's attention on the planning process and building relationships that continue into the future. This type of collaboration is not easy to attain. Regionally, a plenitude of local governments and authorities are in control of much of the development process, each empowered to act independently in determining and achieving self-defined objectives. Through the accumulation of expertise, this publication focuses on a framework to guide regional organization. This framework includes:

- Information Gathering – knowing the fundamentals of the planning process, integrating environmental, economic, and social factors in measurements and assessments, and analyzing changes in attitudes, values, and behavior.
- Communication – communicating to build awareness, informing to promote understanding, and engaging citizens in achieving sustainability by stimulating commitment.
- Analysis of Governance – assessing the state of our institutions, analyzing the promotion of integrated approaches, and assessing the evolution of decision-making processes.
- Action – measuring our efforts in moving towards sustainability and showing results.

As of yet, few regions have been successful in guiding overall development in ways that achieve smart-growth objectives (Ingram et al. 2009). The reason – no one is looking at the sum of the parts. No one has knitted together the picture that says "this is how we are growing and these are the implications." Hopefully this publication builds on the common understanding that

PWTB 200-1-96

18 May 2011

installation master plans need to include regional-growth strategies. A forward-moving agenda can then be initiated in a way that is consistent with these aspirations.

Appendix D:

Acronyms and Abbreviations

Term	Spellout
ADP	Area Development Plan
AR	Army Regulation
AT	Anti Terrorism
CERL	Construction Engineering Research Laboratory
CIRM	Critical Infrastructure Risk Management
CIS	Capital Investment Strategy
CONUS	Continental United States
DA	Department of the Army
DCIP	Defense Critical Infrastructure Program
DoD	Department of Defense
EPA	Environmental Protection Agency
ERDC	Engineer Research and Development Center
FP	Force Protection
GIS	geographic information system
HQ USACE	Headquarters, U.S. Army Corps of Engineers
IDG	Installation Design Guide
IMCOM	Installation Management Command
ISP	Installation Sustainability Plan
LEED	Leadership in Energy and Environmental Design
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organization
OEA	Office of Economic Adjustment
PDF	Portable Document Format
POC	point of contact
PROSPECT	Proponent-Sponsored Engineer Corps Training
PWTB	Public Works Technical Bulletin
RPLANS	Real Property Planning Analysis System
RPMP	Real Property Master Plan
SPD	Strategic Planning Division
URL	Universal Resource Locator
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USGBC	US Green Building Council
WBDG	Whole Building Design Guide
WWW	World Wide Web

Appendix E:

Bibliography

References

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Ingram, Gregory K., Armando Carbonell, Yu-Hung Hong, and Anthon Flint. 2009. *Smart Growth Polices: An Evaluation of Programs and Outcomes*. Cambridge, MA: Lincoln Institute of Land Policy.

Natural Lands Trust. 2001. *Growing Greener: Conservation by Design*. Media, PA: National Lands Trust.

Porter, Douglas, R. 2002. *Making Smart Growth Work*. Washington, DC: Urban Land Institute.

Conference Presentations and Discussions

Smart Growth Network. 9th Annual New Partners for Smart Growth Conference. Seattle, Washington. 4-7 February 2010.

Federal Planning Division of the American Planning Association. National Conference. New Orleans, Louisiana. 7-9 April 2010.

American Planning Association. National Planning Conference. New Orleans, Louisiana. 10-14 April 2010.

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